ICF-SW1
AN-101

SERVICE MANUAL
REVISED

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model

SPECIFICATIONS

Circuit system	FM: Superheterodyne AM: Dual, conversion superheterodyne
Frequency range	FM: 76 – 108 MHz (TYPE 1) 87.5 – 108 MHz (TYPE 2 to 4) LW: 150 – 528 kHz (TYPE 1 to 3) 150 – 285 kHz (TYPE 4) MW: 531 – 1,611 kHz (at MW channel step selector set to 9 kHz) 530 – 1,610 kHz (at MW channel step selector set to 10 kHz) SW: 1,615 – 29,995 kHz (TYPE 1, 3) 1,615 – 26,100 kHz (TYPE 2, 4)
Antennas	Telescopic antenna (FM/SW) Built-in ferrite bar antenna (MW/LW) Active antenna (LW/MW/SW)
Speaker	Approx. 66 x 35 mm (2⅝ inches x 1½ inches) 8 ohms
Power output	250 mW (at 10% harmonic distortion)
Outputs	Recording output jack (minijack) output level 0.775 mV (–60 dB) output impedance 1 kilohm Headphone jack (stereo minijack) for 18 ohm stereo earphones
Power requirements	Radio: 3 V dc Two size AA (R6) batteries Supplied AC power adaptor (110, 120, 220 or 240 V ac adjustable, 50/60 Hz)
Battery life	Radio: approx. 12 hours of listening for four hours a day at a normal volume, using Sony SUM-3 (NS) batteries
Dimensions	Approx. 118.2 x 71.4 x 23.7 mm (w/h/d) (4¾ x 2⅞ x 15/16 inches) including projecting parts and controls
Weight	Approx. 230 g (5 lb 6.5 oz) including batteries
Accessories supplied	AC power adaptor (1, except for Australian model) Stereo earphones (1) Antenna controller (1) Antenna module (1) Carrying case (soft ... 1 hard ... 1) AC plug adaptor (1, except for UK model) Suction cup (1) Carrying belt (1) Wave handbook (1)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMEMTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUAL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

FM STEREO/LW/MW/SW
PLL SYNTHESIZED RECEIVER

SONY®

MICROFILM

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ICF-SW1E model is added.

FEATURES

- An FM stereo/LW/MW/SW receiver with world-wide band coverage.
- Quartz controlled PLL (Phase Locked Loop) synthesizer system using a microcomputer for easy pinpoint tuning. The tuned frequency is digitally displayed.

Direct tuniung . . Tuning in the station by inputting the frequency of the station directly
Manual tuning . . Even if you don't know the frequency of the station, you can tune in the station precisely.
Scan tuning . . . . An automatic searching of a station
Preset tuning . . . Up to 10 stations can be preset for button-touch tuning
Timer standby . . The function to receive a desired station at the desired time
Sleep timer . . . . . Turning the radio off automatically in 65 minutes

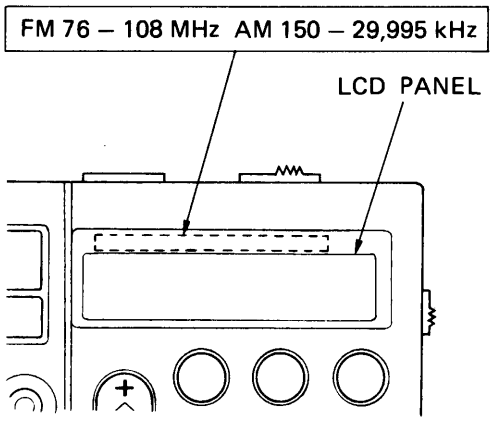
Power sources . . Three different power sources: internal batteries, house current, car batteries
With the supplied AC power adaptor, any AC power source is available.

Classification by frequency coverage

Distinations are classified by frequency indicated on LCD PANEL as the table below.

TYPE	FREQUENCY COVERAGE
TYPE 1–1, –2	FM 76 – 108 MHz AM 150 – 29,995 kHz
TYPE 2	FM 87.5 – 108 MHz AM 150 – 26,100 kHz
TYPE 3–1, –2	FM 87.5 – 108 MHz AM 150 – 29,995 kHz
TYPE 4 (Saudi Arabia)	FM 87.5 – 108 MHz AM 150 – 285/531 – 26,100 kHz

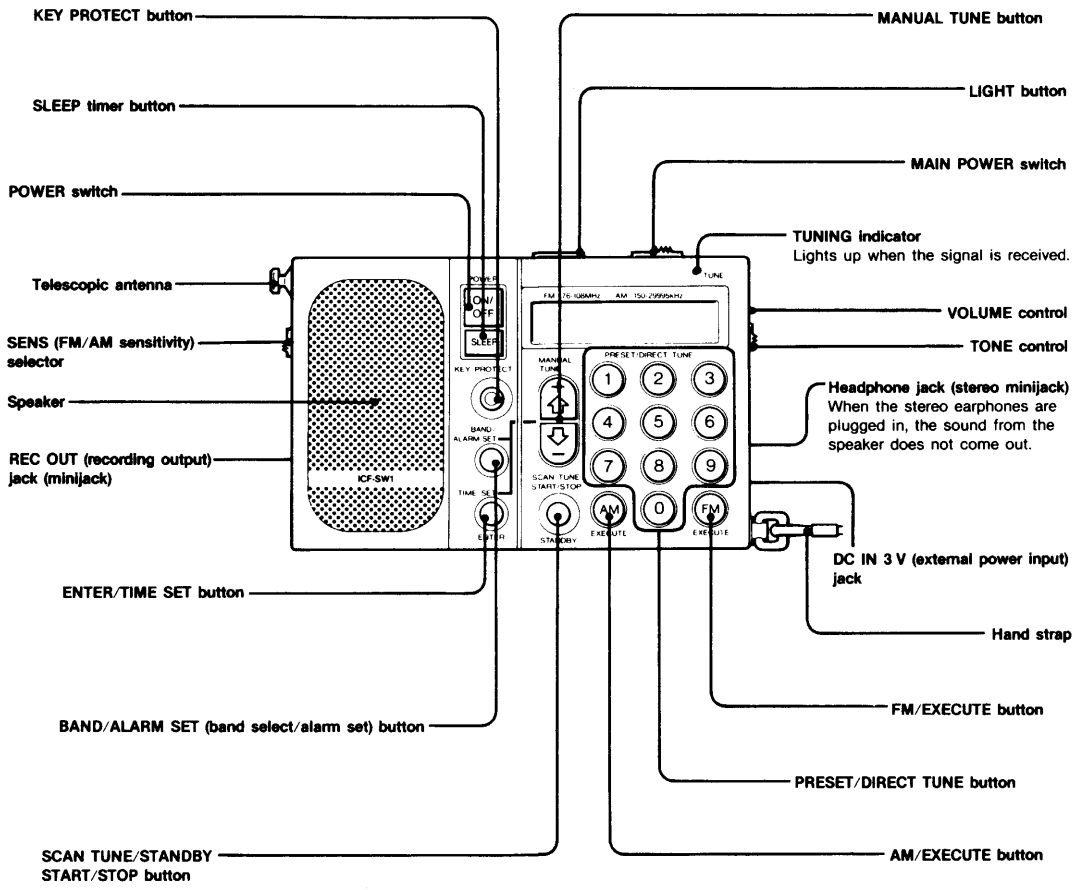
EXAMPLE



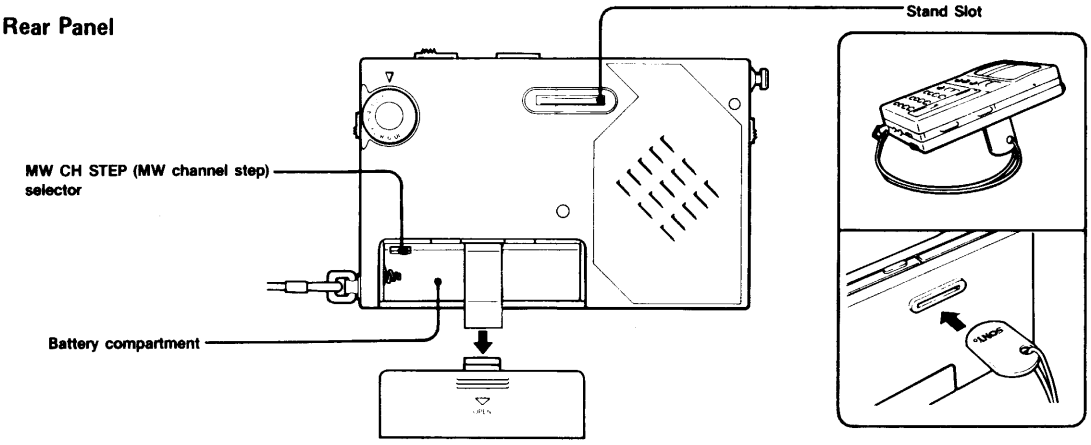
SECTION 1
GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS

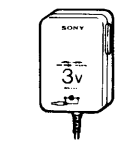
Front Panel



Rear Panel

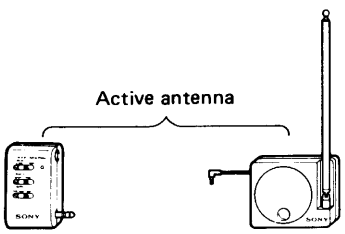


1-2. SUPPLIED ACCESSORIES



AC power adaptor

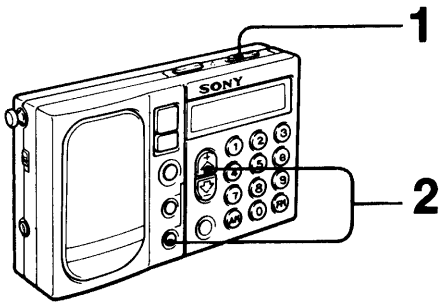
Stereo earphones



Antenna controller (A-3642-002-A)

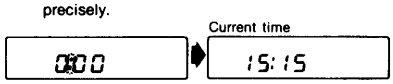
Antenna module (A-3641-193-A)

1-3. HOW TO SET THE CLOCK



1 Set MAIN POWER to ON.

2 Press MANUAL TUNE while keeping TIME SET pressed to adjust the clock to the current time. To advance the time digits rapidly, keep MANUAL TUNE pressed. Press it to adjust the time indication precisely.

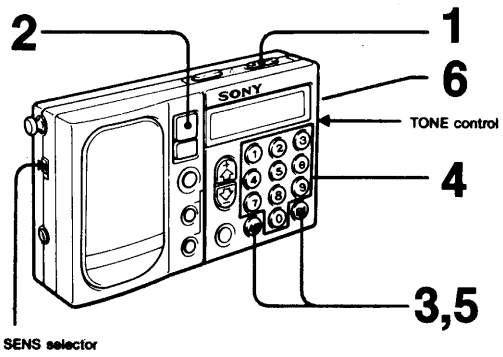


3 Release TIME SET.
The clock will begin to operate.

Setting the clock while listening to the radio
You cannot set the clock while you are listening to the radio. Be sure to press ON/OFF to turn the radio off and set the clock.

The display when MAIN POWER is OFF
The current time is displayed.

1-4. DIRECT TUNING



1 Set MAIN POWER to ON.

2 Press ON/OFF.
The radio is turned on.

3 Press the desired band (FM or AM) button.
To receive SW, MW, LW, press AM.

4 Input the frequency of the station by pressing DIRECT TUNE.
EX. AM. 810 kHz

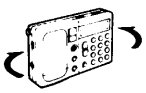
5 Press the same band button again within 5 seconds.
The station will be tuned in.

6 Adjust the volume.

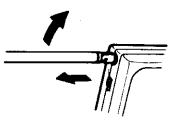
To turn off the radio, press ON/OFF.

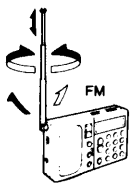
To improve receiving condition

MW/LW



FM/SW



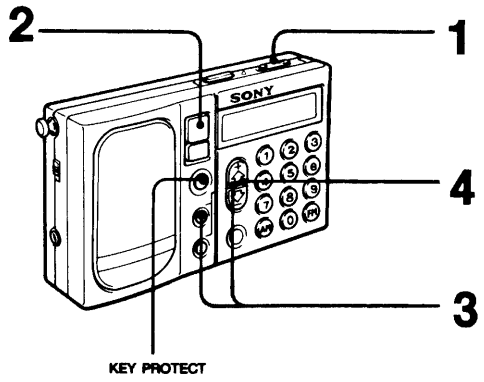


If you input a wrong frequency
Press FM/EXECUTE or AM/EXECUTE again and input the correct frequency.

NOTICE
Reception of 1.8 MHz and 3.6 MHz may be difficult because of internal spurious signals generated by the built-in oscillators.

The inputted station is not tuned in
This occurs if you do not press the band button (FM or AM) within 5 seconds after inputting the frequency of the desired station and the tuned station's frequency will appear.
To tune in the desired station, repeat the sme prodedures from the third step.

1-5. MANUAL TUNING



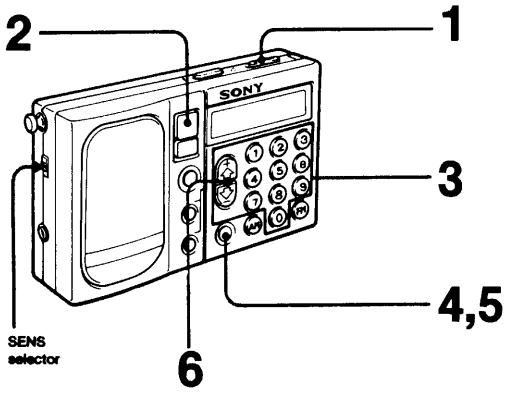
1 Set MAIN POWER to ON.

2 Press ON/OFF.
The radio is turned on.

3 Press MANUAL TUNE (+ or −) repeatedly while keeping BAND pressed to search for the approximate frequency of the desired station. The lowest frequency of each band or the meter band of SW appears in the display. If you keep MANUAL TUNE pressed, the band changes continuously.

4 Press MANUAL TUNE (+ or −) repeatedly to search for a desired station.

1-6. SCAN TUNING



1 Set MAIN POWER to ON.

2 Press ON/OFF.

3 Receive a broadcast band by pressing MANUAL TUNE while keeping BAND pressed, or by pressing DIRECT TUNE. (Refer to the table below for the frequency range of each broadcast band.)

4 Press SCAN TUNE.
Within the frequency range of the table below, scan tuning will begin and stop automatically for 1.5 seconds when a station is received and then the tuning indicator lights up.

5 Press SCAN TUNE again to listen to the station being received.
Scan tuning stops and the station being received is tuned in.

6 Tune in the station more precisely by MANUAL TUNE (+ or −).

The frequency range and the tuning interval of each broadcast band

Broadcast band		Frequency range	SW meter band
AM	LW	150 kHz ~ 528 kHz *1	
	MW	531 kHz ~ 1611 kHz 530 kHz ~ 1610 kHz	*2
	SW	1615 kHz ~ 2245 kHz	*3
		2250 kHz ~ 2550 kHz	120 meter band
		3150 kHz ~ 3450 kHz	90 meter band
		3850 kHz ~ 4050 kHz	75 meter band
		4700 kHz ~ 5100 kHz	60 meter band
		5900 kHz ~ 6250 kHz	49 meter band
		7000 kHz ~ 7400 kHz	41 meter band
		9400 kHz ~ 10000 kHz	31 meter band

*1 150 - 285 kHz for the model for Saudi Arabia and Malaysia.
*2 The frequency range is different according to the MW CH STEP selector.
*3 These frequencies can be tuned in either by direct tuning or manual tuning but cannot be selected by pressing both BAND and MANUAL TUNE buttons.

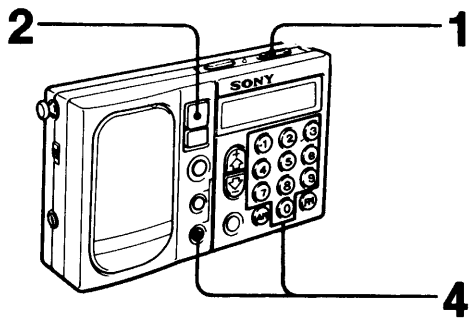
When scan tuning stops too often
Set SENS to LOCAL.

Broadcast band		Frequency range	SW meter band
AM	SW	11500 kHz ~ 12150 kHz	25 meter band
		13500 kHz ~ 13900 kHz	21 meter band
		15000 kHz ~ 15700 kHz	19 meter band
		17450 kHz ~ 18000 kHz	16 meter band
		21400 kHz ~ 21950 kHz	13 meter band
		25600 kHz ~ 26100 kHz	11 meter band
		26105 kHz ~ 29995 kHz	*4
FM		76.00 MHz ~ 108.00 MHz	*5

*4 • These frequencies can be tuned in either by direct tuning or manual tuning but cannot be selected by pressing both BAND and MANUAL TUNE buttons.
• These frequencies cannot be tuned in with the model for Germany and Middle east countries.
*5 87.5 - 108 MHz for the model for France, Germany, Sweden, Switzerland, Scandinavian countries and Middle east countries.

The frequency allocation
LW....3 kHz
MW....9 kHz/10 kHz
SW....5 kHz
FM....100 kHz

1-7. PRESET TUNING



HOW TO PRESET A STATION

1 **Set MAIN POWER to ON.**
2 **Press ON/OFF.**
3 **Tune in a desired station.**
4 **Press one of the PRESET buttons while keeping ENTER pressed.**
The desired station is preset on that button.

Ex. FM 89.0 MHz

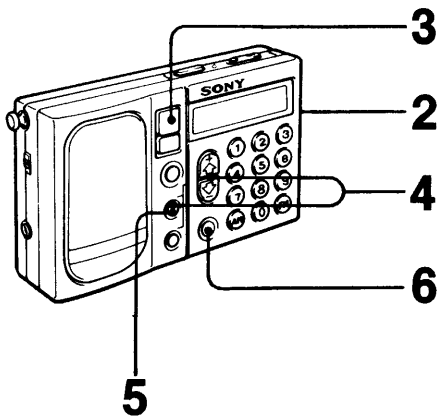
TO TUNE IN A PRESET STATION

1 **Set MAIN POWER to ON.**
2 **Press ON/OFF.**
3 **Press the desired PRESET button.**
The preset station will be tuned in.

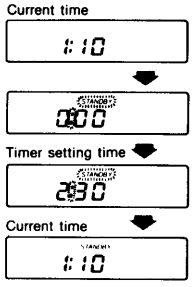
The number of stations you can preset
Up to 10 stations of either an FM or AM can be preset to PRESET.

To change the preset station
Preset a station to the desired PRESET button. The station previously preset to the button is erased.

1-8. HOW TO TURN ON THE RADIO AUTOMATICALLY (Timer standby function)



1 **Tune in the station** which you want to listen to at the desired time.
2 **Adjust the volume.**
3 **Press ON/OFF.**
The radio will be turned off.
4 **Set the time by pressing MANUAL TUNE (+ or −) while keeping ALARM SET pressed.**
If you keep MANUAL TUNE pressed, the time will change continuously.
5 **Stop pressing ALARM SET** and the current time appears in the display.
6 **Press STANDBY.** STANDBY indicator will continue to be displayed.



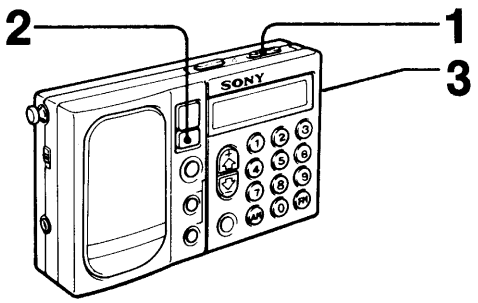
To cancel the alarm mode
Either press STANDBY or set MAIN POWER to OFF.

Once you preset the time
The radio is turned on at the same time everyday.

To check the preset time
Press ALARM/SET.

To change the preset time
Set the desired alarm time, the time previously set is erased.

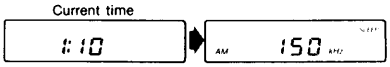
1-9. HOW TO SET THE SLEEP TIMER



1 Set MAIN POWER to ON.

2 Press SLEEP.
The radio is turned on.

Current time



3 Tune in the desired station and adjust the volume.

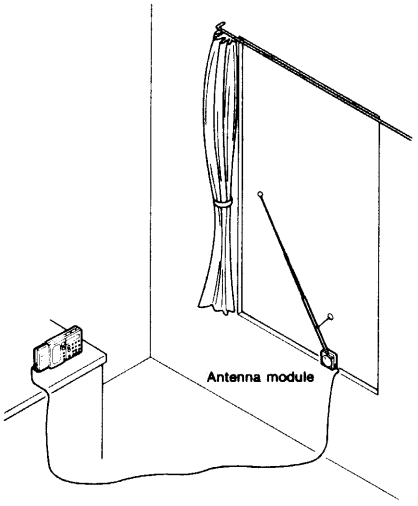
The radio will be turned off automatically after about 65 minutes.

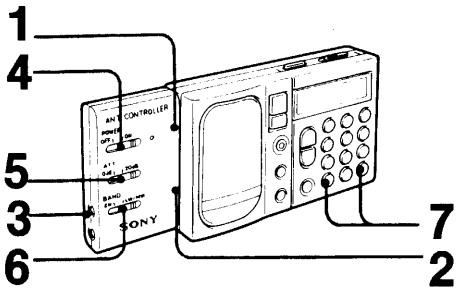
When you press SLEEP while listening to the radio
The radio will be turned off automatically after about 65 minutes.

To turn off the radio before the sleep time
Press ON/OFF.

If you press SLEEP after the radio is turned off
The sleep timer activates and the last station to be tuned in will be received.

1-10. HOW TO USE THE SUPPLIED ACTIVE ANTENNA (For better LW/MW/SW reception)





1 Set SENS of the radio to DX.

2 Collapse the rod antenna and **install the antenna controller to the radio.**

3 Pull out the output cable from the antenna module and **plug it into the FROM MODULE jack.**

4 Set POWER to ON.
The power indicator lights up.

5 Set ATTENUATER to 0 dB.

6 Set BAND to the desired band.

7 Select the same band on the radio and **tune in the desired station.**

8 Extend the telescopic antenna of the antenna module.

SECTION 2
OUTLINE

2-1. OUTLINE OF THE C-MOS DIGITAL-TUNING SYSTEM IC801, μPD1715G-545

Note: Display flicker period has been changed depending on program change of IC801.

FORMER TYPE: μPD1715G-545-22
(8-759-140-92)

NEW TYPE: μPD1715G-558-22
(8-759-142-35)

There is interchangeability between former type and new type for IC801, so that a new type part is supplied for replacement.
US model: Serial No. 30601 and later.
Confirm type No. of IC801 for other countries.

2-1-1. OUTLINE OF THE STATION-SELECTION

1) Receiving-frequency Coverages and Scan Range

The following table shows the frequency coverages and scan range of μPD1715G-545 can receive.

BAND	SCAN RANGE	CHANNEL SEPARATION	NOMINAL SPACING
LW	150kHz - 528kHz	3kHz	3kHz
MW1	531kHz - 1611kHz	9kHz	3kHz
MW2	530kHz - 1610kHz	10kHz	5kHz
※1	1615kHz - 2245kHz	5kHz	5kHz
	2250kHz - 2550kHz	5kHz	5kHz
	3150kHz - 3450kHz	5kHz	5kHz
	3850kHz - 4050kHz	5kHz	5kHz
	4700kHz - 5100kHz	5kHz	5kHz
	5900kHz - 6250kHz	5kHz	5kHz
	7000kHz - 7400kHz	5kHz	5kHz
SW	9400kHz - 10000kHz	5kHz	5kHz
	11500kHz - 12150kHz	5kHz	5kHz
	13500kHz - 13900kHz	5kHz	5kHz
	15000kHz - 15700kHz	5kHz	5kHz
	17450kHz - 18000kHz	5kHz	5kHz
	21400kHz - 21950kHz	5kHz	5kHz
	25600kHz - 26100kHz	5kHz	5kHz
※2	26105kHz - 29995kHz	5kHz	5kHz
FM1	76.00MHz - 108.00MHz	100kHz	12.5kHz
FM2	87.50MHz - 108.00MHz	50kHz	12.5kHz

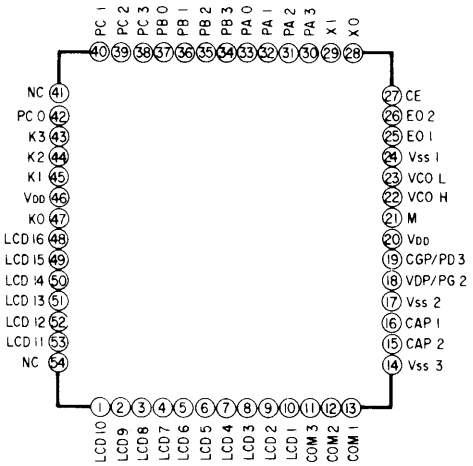
Note: Either direct or manual selection is feasible for ※1 frequency range or meter band, but BAND SELECT key is inoperative.
Able to scan.
※2 range, but unable to receive during in up/down mode.

2) Station-selecting Functions:

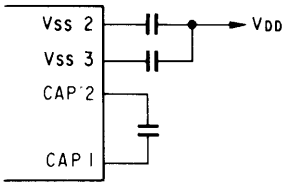
a) Selection with 10 key.
b) Manual up/down selection with up/down key.
c) Random selection out of the preset memories by key-in calling. Total 10 stations.
d) Scanning selection.
e) Last channel memory.

2-1-2. DESCRIPTION ON THE TERMINALS

1) Terminal Arrangement



2) IC801 (μPD1715G-545) Pin Functions

PIN No.	SYMBOL	NAMING	DESCRIPTION
1 | 10	LCD9 | LCD1	LCD SEGMENT SIGNALS	Transmit the segment-output signals to the LCD panel. When matrixes are configured together with the COM1 thru COM3, a display of 48 dots can be made. These output signals are output when the LCDD commands are made. The LCD-driving voltages are of 3.1V typical, 1/2 bias and 1/3 duty when the frame frequency is 100 Hz. These LCD11 through LCD16 can also be used at the same as the key source signals for the key matrix. These signal are output on time-division bases, and they are output as the key-source signals at the repetition rate of 6.7 msec. Whether the key-source signal are to be output while having displays on the panel is dependent upon and selectable by the programs used. These terminals become automatically in the "L" (low) state, i.e., non-display mode, at the power-on reset (VDD changes from low to high state) and at the stoppage moment of the clock. The display mode does not change at the reset moment in which CE changes from low to high state.
11 | 13	COM3 | COM1	LCD COMMON SIGNAL	Transmit common signals to the LCD panel. When the matrixes are configured together with the LCD1 through LCD16, a display of 48 dots can be made. Three distinctive signals of VSS3, VSS2 and VDD are output through these terminals at the repetition rate of 50 Hz. These terminals become automatically in the "L" (low) state, i.e., non-display mode, at the power-on reset (VDD changes from low to high state) and at the stoppage moment of the clock.
14 15 16 17	VSS3 CAP2 CAP1 VSS2	CAPACITOR CONNECTION TERMINAL FOR DOUBLER	Capacitor-connection terminals to make a proper voltage doubler to build the 3.1V typical LCD-driving voltage VDD. Normal circuit configuration is as follows. 
18	PG2 (VDP)	VARIABLE DUTY PORT	Outputs the variable-duty or the one-bit (PG2) signal. Not used.
19	PD3 (CGP) MUTE	CLOCK GENERATOR PORT (MUTE SIGNAL)	Outputs the clock-generator or the one-bit (PD3) signal. The selection of either of them is programmable. When used as the CGP, this terminal can transmit the pulse chain of 1 kHz of 46.6% duty or 3 kHz of 60% duty. Outputs signal to cut noise between frequency change due to key input and PLL lock, Low level output actuates mute.
20	VDD	INPUT OF POWER SUPPLY VOLTAGE	Receives the power-supply voltage for this device. In operation, a voltage of 2.0 to 3.5 VDC is applied to this terminal. The input voltage can be lowered down to 1.5 VDC when any of the internal data in the RAM, i.e., when the CKSTP command is under execution, is to be holded. The power-on reset circuit of device starts to operate at the instance this terminal receives a voltage of 0 (zero) to 1.7 VDC, and the program starts from the location 0 (zero). Note: This pin and pin 46 are connected internally. So, it is not necessary to apply the power-supply voltage to both of them. The ceramic-packaged device, however, has a not-to-be connected pin 46, i.e., N.C. terminal.

<table>
<tr><th>PIN NO.</th><th>SYMBOL</th><th>NAMING</th><th>DESCRIPTION</th></tr>
<tr><td>21</td><td>M</td><td>CONTROL-
SIGNAL
INPUT
FOR
DIVIDER</td><td>Determines the dividing ratio of the fixed-division prescaler.
A 1/4 dividing ratio is made when this terminal is held at "H" (high), and a 1/2 divider is made when held at "L" (low).
This port is used only when the VCOH terminal (FM in this set) i.e., pin 22 is used.
This set uses this port as a 1/4 divider for FM and 1/2 divider for AM.</td></tr>
<tr><td>22</td><td>VCOH</td><td>OSC
SIGNAL
INPUT</td><td>Inputs 1/4 divider 10 ~ 130 MHz (0.1 Vp-p MIN.) or 1/2 divider 10 ~ 100 MHz (0.1 Vp-p MIN.) of local-oscillator output, i.e., the VCO output. This input signal is connected internally in this device through the 1/2 fixed-divider prescaler or the 1/4 fixed-divider prescaler and through the two-module prescaler composed of 1/32 and 1/33 frequency dividers to the internal programmable counter.
This terminal is pulled down to the ground level when the direct frequency-dividing system is taken into the circuit or when the Pulse-Swallow system is used with the HF command executed, i.e., the VCOL (AM) terminal is selected.
A capacitor coupling is needed due to the inclusion of alternate current amplifiers inside this device.</td></tr>
<tr><td></td><td>VCOL</td><td></td><td>Receives an AM local-oscillator signals, i.e., the VCO signal from 0.5 MHz to 40 MHz of 0.2 Vp-p minimum.
This port is selected when the direct frequency-dividing system or the Pulse-Swallow system is used and, at the same time, the HF command is excecuted. These two systems are, however, different one another as shown below.
<table>
<tr><th>DIVIDING SYSTEM</th><th>INPUT LEVEL (MINIMUM)</th><th>INPUT FREQUENCY</th><th>DIVIDING RATIO</th></tr>
<tr><td>DIRECT</td><td>0.1 Vp-p</td><td>0.5 to 15 MHz</td><td>16 to (2^{12}-1)</td></tr>
<tr><td>PULSE-SWALLOW (HF COMMAND EXECUTED)</td><td>0.2 Vp-p</td><td>0.5 to 40 MHz</td><td>1,024 to (2^{17}-1)</td></tr>
</table>
This terminal is pulled down to the groung level when the Pulse-Swallow system is used together with the VHF-command execution, i.e., the VCOH (FM) terminal is selected. A capacitor coupling is needed due to the inclusion of alternate current amplifiers inside this chip. Not used.</td></tr>
<tr><td>24</td><td>Vssl</td><td>GROUND</td><td>The ground-return terminal of this device.</td></tr>
<tr><td>25

26</td><td>E01

E02</td><td>ERROR
OUTPUT

ERROR
OUTPUT</td><td>Transmits the error signal of the PLL system. When the resultant frequencies obtained by dividing the local-oscillator frequencies are higher than the reference frequency, an "H" (high)-level signal is output from this port. When these are lower, on the contrary, an "L" (low)-level signal is output from this port. When these divided frequencies just coincide with the reference frequency, this port becomes in a floating state. These output signals from this port then go through the external lowpass filter to the varactor diodes in the turned circuits in these frontends of the receiver. The same output waveform as the terminal E01 is obtainable from the next terminal E02, pin 26, and so these two are user-selectable. When the PLL is disabled, i.e., when the system is set by the PLL commands or the CE terminal, pin 27, is set to the "L" (low)-level, these E01 and E02 terminals become in the floating states.</td></tr>
<tr><td>27</td><td>CE</td><td>CHIP
ENABLE</td><td>Receives the state-selection signals for this device.
When set a "H" (high), this device works, and vice versa. The PLL section of this device becomes forcively in a disabled condition in the duration of wider than 140 μsec of the "L" (low)-level state. The duration, however, of shorter than 140 μsec is not taken into account. The programmes are using the CKSTP commands. The CKSTP commands are effective only when the state of this CE is in an "L" (low) condition. When this CE terminal is in an "H" state, these programmes work like under NOP commands.
When the CKSTP commands are executed when this CE terminal is in an "L" (low) level, the internal clock generator and the internal CPU are disabled. In this disabled condition, the RAM-memory backupings can be made under a very-low current consumption of 3 μA maximum. In this condition, these display-output signals LCD1 through LCD16 and the COM1 COM3 become in the off-display mode, i.e., the "L" (low) state.
When the level of this CE terminal is changed from "L" to "H", this device is reset and its programmes start from the location "0" (zero). In this state, the Port A becomes in the input mode.
Goes to "L" (low) when main power switch is OFF or when the power supply is below 1.9V (1.8 – 2.0 V).</td></tr>
</table>

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<tr><th>PIN NO.</th><th>SYMBOL</th><th>NAMING</th><th>DESCRIPTION</th></tr>
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INPUT
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A 1/4 dividing ratio is made when this terminal is held at "H" (high), and a 1/2 divider is made when held at "L" (low).
This port is used only when the VCOH terminal (FM in this set) i.e., pin 22 is used.
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<tr><td>22</td><td>VCOH</td><td>OSC
SIGNAL
INPUT</td><td>Inputs 1/4 divider 10 ~ 130 MHz (0.1 Vp-p MIN.) or 1/2 divider 10 ~ 100 MHz (0.1 Vp-p MIN.) of local-oscillator output, i.e., the VCO output. This input signal is connected internally in this device through the 1/2 fixed-divider prescaler or the 1/4 fixed-divider prescaler and through the two-module prescaler composed of 1/32 and 1/33 frequency dividers to the internal programmable counter.
This terminal is pulled down to the ground level when the direct frequency-dividing system is taken into the circuit or when the Pulse-Swallow system is used with the HF command executed, i.e., the VCOL (AM) terminal is selected.
A capacitor coupling is needed due to the inclusion of alternate current amplifiers inside this device.</td></tr>
<tr><td></td><td>VCOL</td><td></td><td>Receives an AM local-oscillator signals, i.e., the VCO signal from 0.5 MHz to 40 MHz of 0.2 Vp-p minimum.
This port is selected when the direct frequency-dividing system or the Pulse-Swallow system is used and, at the same time, the HF command is excecuted. These two systems are, however, different one another as shown below.
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This terminal is pulled down to the groung level when the Pulse-Swallow system is used together with the VHF-command execution, i.e., the VCOH (FM) terminal is selected. A capacitor coupling is needed due to the inclusion of alternate current amplifiers inside this chip. Not used.</td></tr>
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26</td><td>E01

E02</td><td>ERROR
OUTPUT

ERROR
OUTPUT</td><td>Transmits the error signal of the PLL system. When the resultant frequencies obtained by dividing the local-oscillator frequencies are higher than the reference frequency, an "H" (high)-level signal is output from this port. When these are lower, on the contrary, an "L" (low)-level signal is output from this port. When these divided frequencies just coincide with the reference frequency, this port becomes in a floating state. These output signals from this port then go through the external lowpass filter to the varactor diodes in the turned circuits in these frontends of the receiver. The same output waveform as the terminal E01 is obtainable from the next terminal E02, pin 26, and so these two are user-selectable. When the PLL is disabled, i.e., when the system is set by the PLL commands or the CE terminal, pin 27, is set to the "L" (low)-level, these E01 and E02 terminals become in the floating states.</td></tr>
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ENABLE</td><td>Receives the state-selection signals for this device.
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When the CKSTP commands are executed when this CE terminal is in an "L" (low) level, the internal clock generator and the internal CPU are disabled. In this disabled condition, the RAM-memory backupings can be made under a very-low current consumption of 3 μA maximum. In this condition, these display-output signals LCD1 through LCD16 and the COM1 COM3 become in the off-display mode, i.e., the "L" (low) state.
When the level of this CE terminal is changed from "L" to "H", this device is reset and its programmes start from the location "0" (zero). In this state, the Port A becomes in the input mode.
Goes to "L" (low) when main power switch is OFF or when the power supply is below 1.9V (1.8 – 2.0 V).</td></tr>
</table>

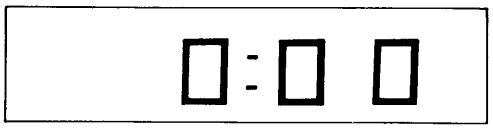
2-1-3. INITIAL-STATE SETTING

1) Initial Power-on Setting:

VDD = 0 V → 3.0 V, CE = Low → High

The power-supply is reset after performing the initial power-on setting, and the following operations are made.

a) The power-out terminal becomes in "L" (low) state, i.e., power off, and reads the initial-state setting diodes.
b) Initializes the preset-memories contents of each figures from 0 to 9 to its 150 kHz frequency.
c) Initializes the last-channel memories contents of the above each cases to its 150 kHz frequency.
d) Sets the clock and alarm time to "0:00", and resets the "second" starting.
e) And the LCD displays the following clock display.



(24-hour system)

2) Backup Condition:

CE = Low

The backup state is made when the CE terminal becomes in "L" (low) state. In the backup state, the program routines are intermittently performed to eliminate the current drain by using the "HALT" command. The operation routine is as follows.

a) The PLL is disabled.
b) All the ports are made into "L" (low) state.
c) LCD displays remains only for the clock display.

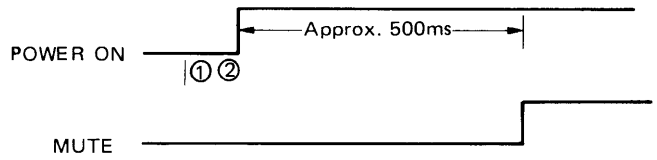
Note: The same operations are made in the radio-off state when CE is "H" (high).

2-1-4. MUTING-OUTPUT TIMINGS

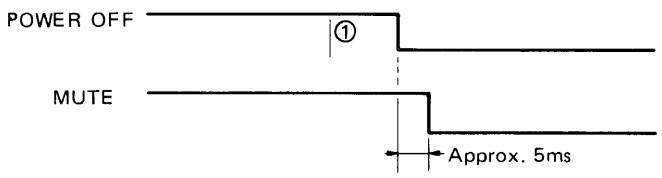
1) MUTE-OUTPUT

1 Allowance for key-on chattering (approx. 15msec).
2 Range check, N count, and PLL DATA output.
MUTE: Mute mode at low level.

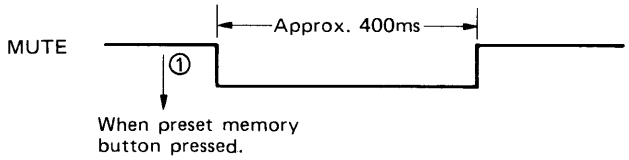
a) RADIO ON



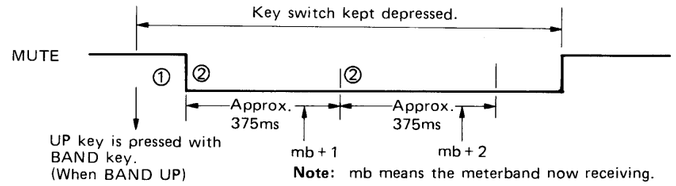
b) RADIO OFF



C) Preset selection, Direct selection, Band switching (Band UP/DOWN, manual selection).

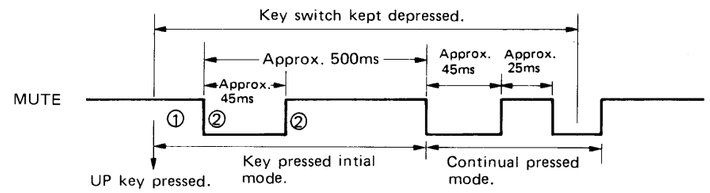


d) Continual band UP/DOWN

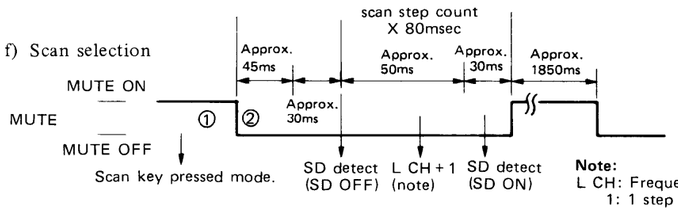


e) Continual frequency UP/DOWN (manual selection)

· In the same band

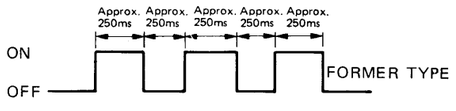


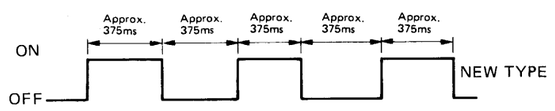
f) Scan selection



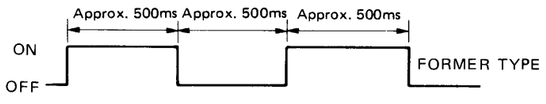
2) DISPLAY FLICKER PERIOD

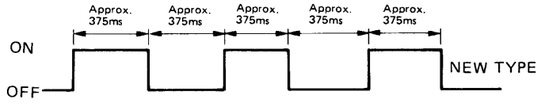
a) Time/Alarm set flicker



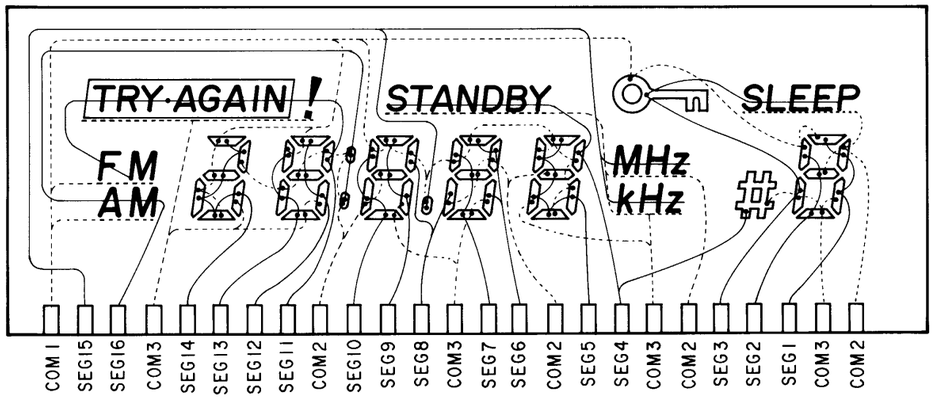


b) TRY AGAIN! Memory write # flicker.

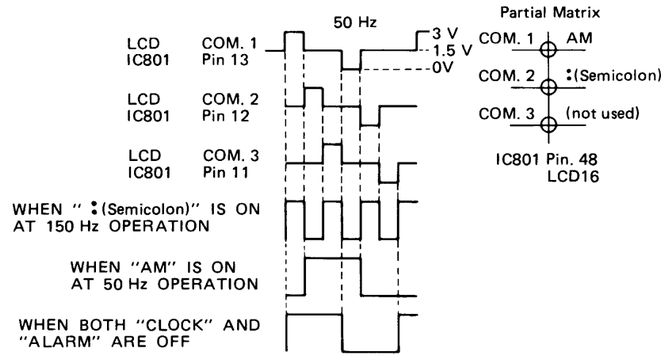




2-1-5. SEGMENTS AND COMMONS OF LIQUID-CRYSTAL DISPLAY PANEL (LCD801)



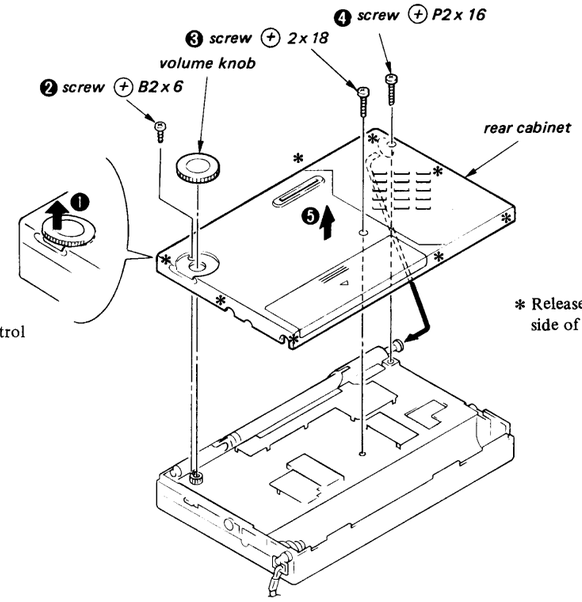
2-1-6. RELATIONSHIP OF LCD (LCD801) SEGMENTS TO LSI PINS


50 Hz
3 V
1.5 V
0V
Partial Matrix
LCD IC801 COM. 1 Pin 13
LCD IC801 COM. 2 Pin 12
LCD IC801 COM. 3 Pin 11
COM. 1 AM
COM. 2 :(Semicolon)
COM. 3 (not used)
IC801 Pin. 48 LCD16
WHEN " :(Semicolon)" IS ON AT 150 Hz OPERATION
WHEN "AM" IS ON AT 50 Hz OPERATION
WHEN BOTH "CLOCK" AND "ALARM" ARE OFF

SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

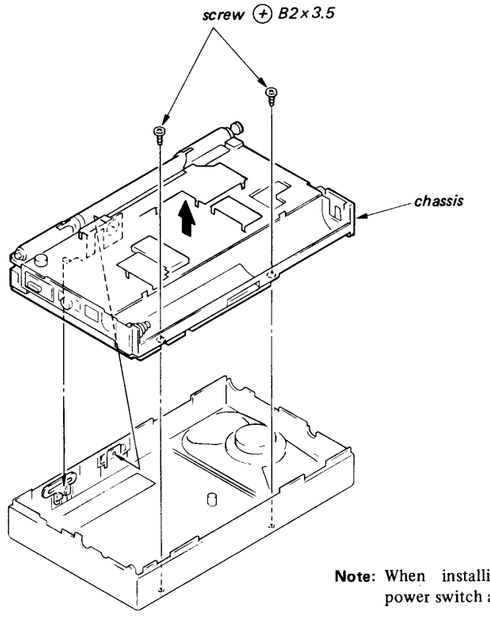
REAR CABINET



Note:
Pull the volume control knob vertically.

* Release the claws inside with pushing the side of CABINET.

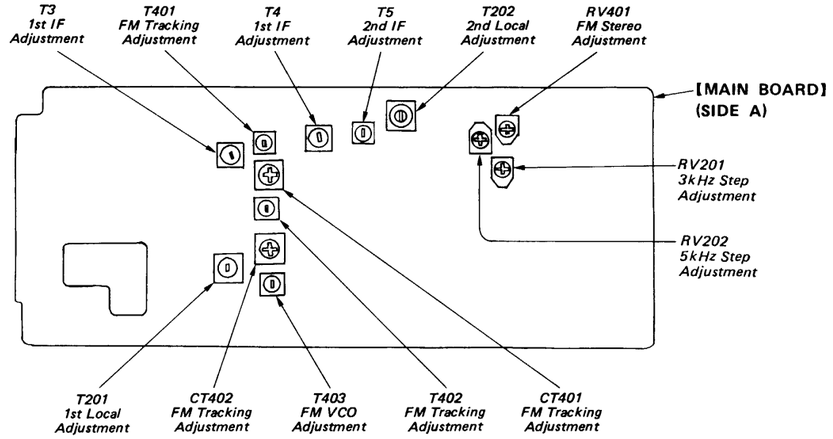
CHASSIS



Note: When installing, put the positions of power switch and LIGHT switch together.

SECTION 4
ELECTRICAL ADJUSTMENTS

- **Parts location diagram relevant to the adjustment**

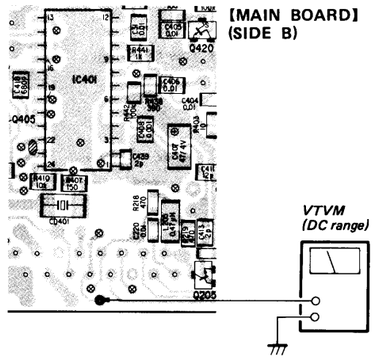


- **AM SECTION**

1st LOCAL ADJUSTMENT

Setup:

VOLUME control: as required



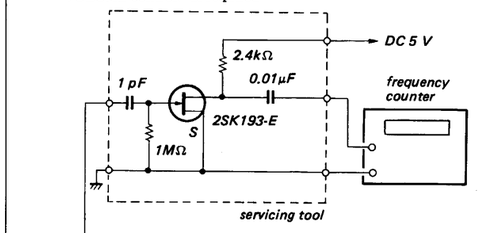
Procedure:

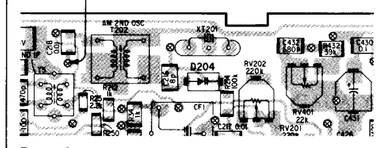
1. Tune the set to AM 150 kHz.
2. Adjust T201 to obtain a 2.59 – 2.61 V on the VTVM.
3. Tune the set to AM 29.995 MHz.
4. Confirm that the voltage reading on the VTVM is less than 12 V.

2nd LOCAL ADJUSTMENT/3 kHz STEP/5 kHz STEP ADJUSTMENT

Setup:

VOLUME control: as required





Procedure:

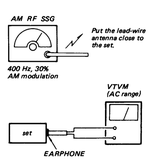
- 2nd LOCAL ADJUSTMENT
  1. Tune the set to AM 153 kHz.
  2. Adjust T202 to obtain a 55.3899 – 55.3901 MHz on the frequency counter.
- 3 kHz STEP ADJUSTMENT
  3. Tune the set to AM 156 kHz.
  4. Adjust RV201 to obtain a 55.3849 – 55.3851 MHz on the frequency counter.
- 5 kHz STEP ADJUSTMENT
  5. Tune the set to AM 1,620 kHz.
  6. Adjust RV202 to obtain a 55.850 MHz on the frequency counter.

NOTE: This adjustment should be performed after the remove Rod-Antenna (ANT1).
This adjustment should be performed after the FM FREQUENCY-COVERAGE ADJUSTMENT.

1st/2nd IF ADJUSTMENT

Setup:

VOLUME control: as required



Procedure:

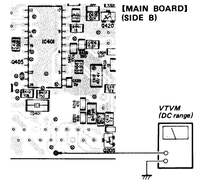
- 1st IF ADJUSTMENT
  1. Set the frequencies of the AM RF SSG and the frequency display of the set to 156 kHz.
  2. Adjust T3 and T4 to obtain a maximum reading on the VTVM.
- 2nd IF ADJUSTMENT
  1. Set the frequencies of the AM RF SSG and the frequency display of the set to 156 kHz.
  2. Adjust T5 to obtain a maximum reading on the VTVM.

• FM SECTION

FM FREQUENCY COVERAGE (VCO VOLTAGE) ADJUSTMENT

Setup:

VOLUME control: as required



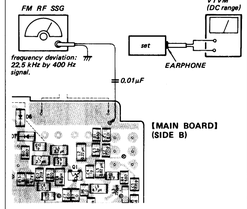
Procedure:

1. Tune the set to 108 MHz.
2. Adjust T403 to obtain a 11.9 – 12.1 V on the VTVM.

FM TRACKING ADJUSTMENT

Setup:

VOLUME control: as required



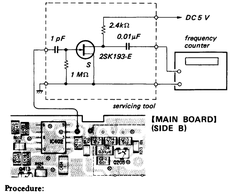
Procedure:

1. Set the frequencies of the FM RF SSG and the frequency display of the set to 76 MHz.
2. Adjust T401 and T402 to obtain a maximum reading on the VTVM.
3. Set the frequencies of the FM RF SSG and the frequency display of the set to 108 MHz.
4. Adjust CT401 and CT402 to obtain a maximum reading on the VTVM.
5. Repeat the above steps several times, and finish the adjustment with the trimmers CT401 and CT402.

FM STEREO ADJUSTMENT

Setup:

VOLUME control: as required

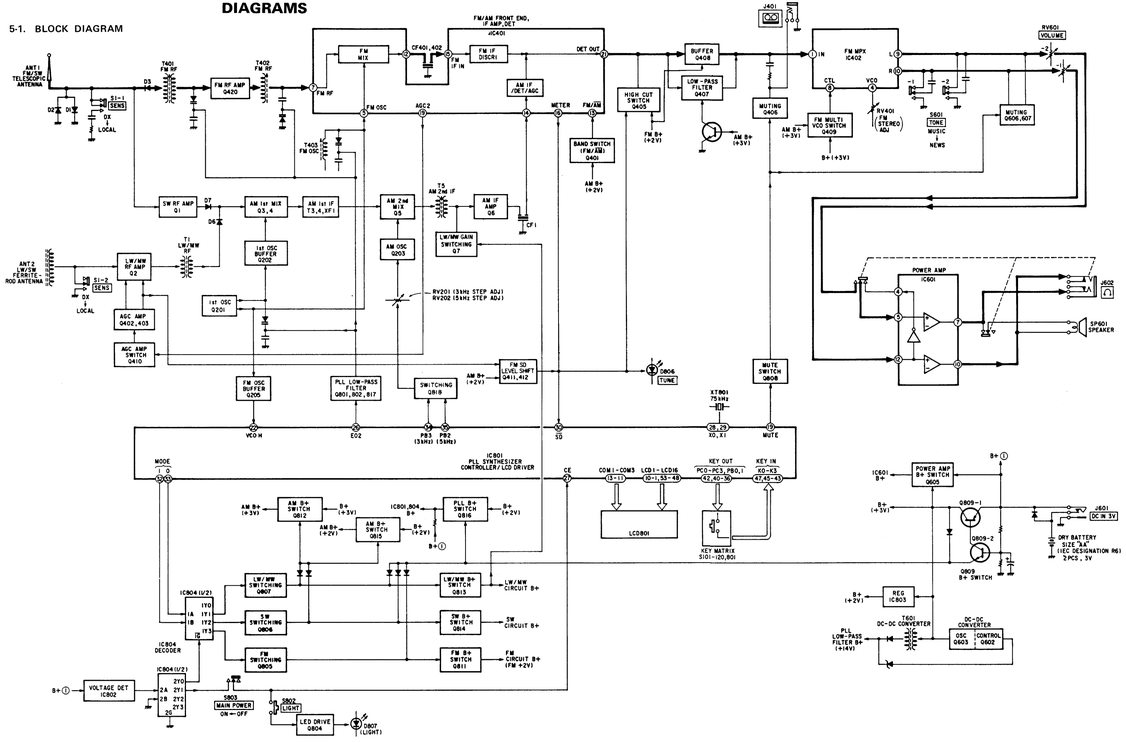


Procedure:

1. Adjust RV401 to obtain a 75.9 – 76.1 kHz on the frequency counter.

SECTION 5
DIAGRAMS

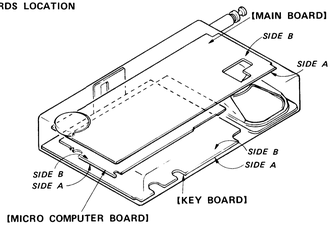
5-1. BLOCK DIAGRAM



5-2. SEMICONDUCTOR LEAD LAYOUTS

S-8051HN-CD-S	CX20111	XN1215	1SS303	RD13M-B2	TLUR122
BA5208AF	**LA5002M**	**2SK94-X2 2SK613-3**	**1SS123**	**XN5501**	
LA3335M	**µPD1715G-545-22**	**DTC114TU DTC124EV**	**1SS304**	**XN4608**	
µPD74HC239G	**2SB815 2SC3624A-L16 2SC4177 2SC4178 2SD1048**	**2SK238-K16**	**1SS279 1T33**	**TLG123A**	

5-3. CIRCUIT BOARDS LOCATION



NEW TYPE

SEE ADDITIONAL INFORMATION

NEW TYPE

SEE ADDITIONAL INFORMATION

NEW TYPE

5-4. PRINTED WIRING BOARDS

● See page 20 for semiconductor lead layouts.

● **Semiconductor Location**

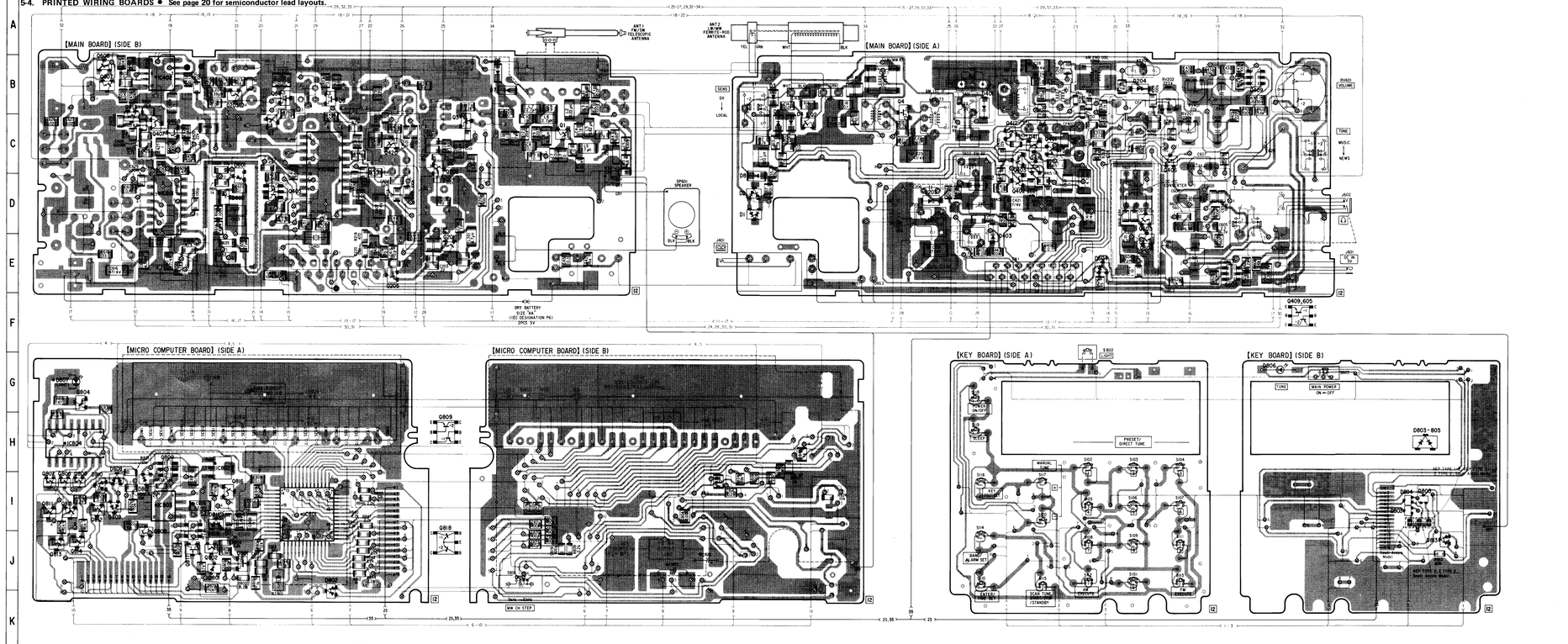
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D1	D-13	D813	J-24	Q409	B-21
D2	D-13			Q410	C-18
D3	B-13	IC401	C-6	Q411	C-18
D4	B-14	IC402	B-3	Q412	C-17
D5	B-13	IC601	D-3	Q413	B-2
D6	B-9	IC801	I-5	Q420	C-7
D7	B-9	IC802	H-4	Q602	E-19
D8	D-13	IC803	I-3	Q603	D-19
D203	D-16	IC804	H-1	Q605	E-21
D204	B-19			Q606	B-2
D401	B-17	Q1	C-10	Q607	B-2
D402	D-17	Q2	B-14	Q801	J-4
D403	D-17	Q3	C-8	Q802	J-4
D601	C-4	Q4	B-15	Q804	G-2
D602	D-4	Q5	B-6	Q805	I-2
D604	E-19	Q6	B-5	Q806	I-1
D801	J-4	Q7	C-5	Q807	I-1
D802	J-6	Q201	E-8	Q808	J-3
D803	I-24	Q202	C-8	Q809	H-3
D804	I-24	Q203	B-4	Q811	I-1
D805	I-24	Q205	E-7	Q812	I-2
D806	G-22	Q401	C-18	Q813	J-1
D807	G-1	Q402	D-17	Q814	J-1
D808	H-2	Q403	C-17	Q815	I-1
D809	I-2	Q405	D-5	Q816	I-4
D810	I-2	Q406	C-20	Q817	J-3
D811	I-4	Q407	C-3	Q818	J-4
D812	I-3	Q408	C-3		

Note:

- Color code or sleeving over the end of the jacket.

Destination	New Type Serial No.
US	23901 and later
Canadian	A24701 and later
AEP	24801 and later
UK	33401 and later
E	22691 and later
Australian	30501 and later

- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ⊗ : Through hole.
- ▒▒ : Pattern on the side which is seen.
- ⊗——⊗ : Through hole to SIDE A and SIDE B indicate to jointed number and connection.
- ○——○ : SIDE A and SIDE B indicate to jointed number and connection.
- ● ■ : parts mounted on the conductor side.



NEW TYPE | NEW TYPE | NEW TYPE

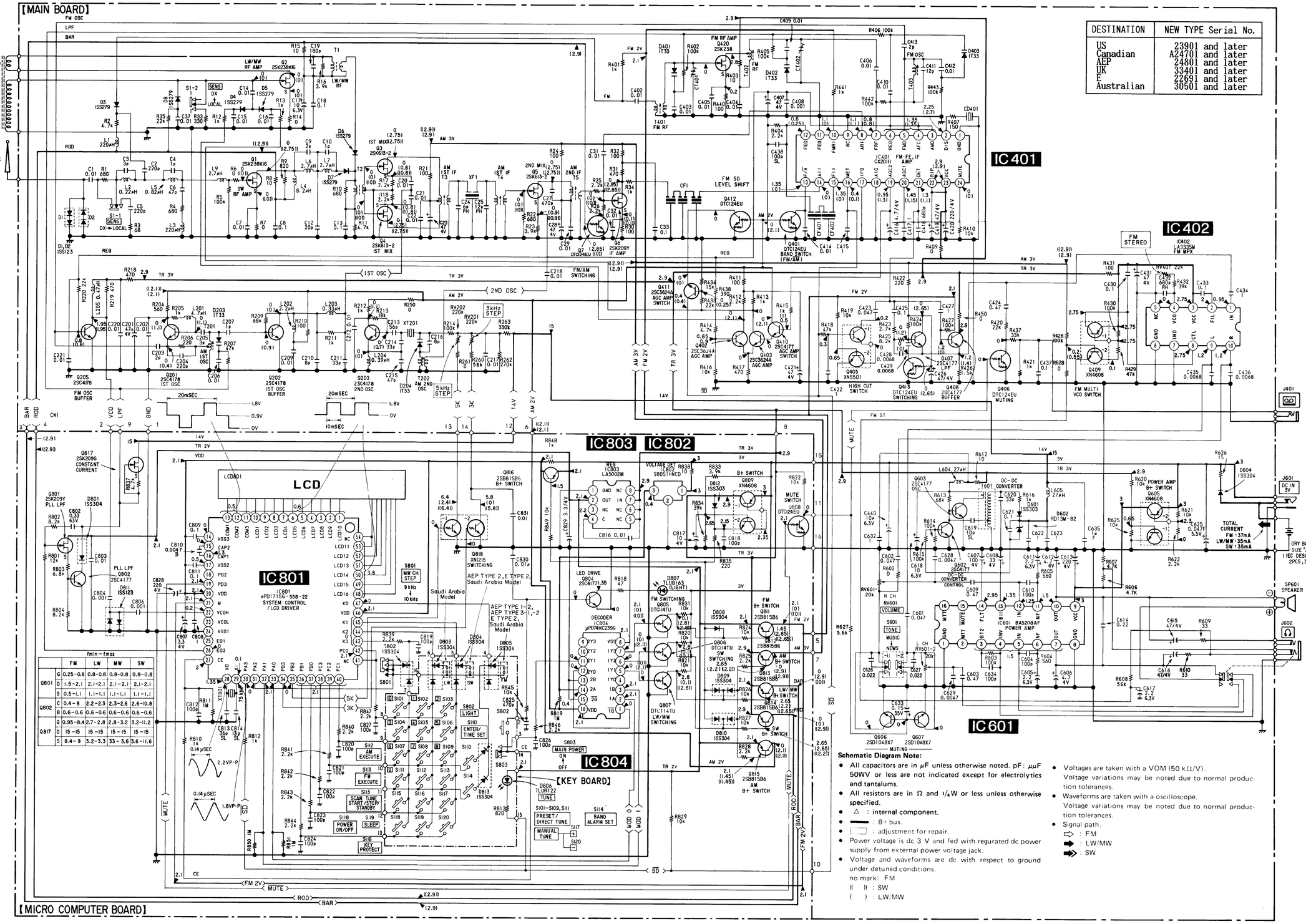
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

A B C D E F G H I J K L M N O

5-5. SCHEAMTIC DIAGRAM

- See page 14 for liquied-crystal panel (LCD801).
- See page 35 for IC block diagrams.

DESTINATION	NEW TYPE Serial No.
US	23901 and later
Canadian	A24701 and later
AEP	24801 and later
UK	33401 and later
E	22691 and later
Australian	30501 and later



		FM	LW	MW	SW
Q801	G	0.25–0.8	0.8–0.8	0.8–0.8	0.8–0.8
	D	1.5–2.1	2.1–2.1	2.1–2.1	2.1–2.1
	S	0.5–1.1	1.1–1.1	1.1–1.1	1.1–1.1
Q802	C	0.4–8	2.2–2.3	2.3–2.6	2.6–10.8
	B	0.6–0.6	0.6–0.6	0.6–0.6	0.6–0.6
Q817	G	0.95–8.4	2.7–2.8	2.8–3.2	3.2–11.2
	D	15–15	15–15	15–15	15–15
	S	8.4–9	3.2–3.3	33–3.6	3.6–11.6

fmin–fmax

Schematic Diagram Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▬▬ : B+ bus.
- ⬚ : adjustment for repair.
- Power voltage is dc 3 V and fed with regurated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under detuned conditions.
  no mark: FM
  (( )) : SW
  ( ) : LW/MW
- Voltages are taken with a VOM (50 kΩ/V). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ➡ : LW/MW
  ➡ : SW

FORMER TYPE | FORMER TYPE | FORMER TYPE

5-6. SCHEMATIC DIAGRAM

- See page 14 for liquid-crystal panel (LCD801).
- See page 35 for switch position and IC block diagrams.

Destination	Former Type Serial No.
US	Up to 23900
Canadian	Up to A24700
AEP	Up to 24800
UK	Up to 33400
E	Up to 22690
Australian	Up to 30500

It is needed to replace all those parts marked ✻ at the same time in case when necessary replacement for one of them.

✻印の部品で以下に記した部品を交換する場合は同時に部品交換が必要です。

REF NO.	OLD	NEW
R428	220k	100k
R429	100k	47k
R606	10k	4.7k
R607	10k	4.7k
R608	100k	56k

【MAIN BOARD】

IC401

IC402

IC803 IC802

IC801

IC804

IC601

【KEY BOARD】

【MICRO COMPUTER BOARD】

fmin–fmax	FM	LW	MW	SW
Q801 G	0.25–0.8	0.8–0.8	0.8–0.8	0.8–0.8
Q801 D	1.5–2.1	2.1–2.1	2.1–2.1	2.1–2.1
Q801 S	0.5–1.1	1.1–1.1	1.1–1.1	1.1–1.1
Q802 C	0.4–8	2.2–2.3	2.3–2.6	2.6–10.8
Q802 B	0.6–0.6	0.6–0.6	0.6–0.6	0.6–0.6
Q817 G	0.95–8.4	2.7–2.8	2.8–3.2	3.2–11.2
Q817 D	15–15	15–15	15–15	15–15
Q817 S	8.4–9	3.2–3.3	33–3.6	3.6–11.6

Schematic Diagram Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▬▬ : B+ bus.
- ▭ : adjustment for repair.
- Power voltage is dc 3 V and fed with regurated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under detuned conditions.
  no mark: FM
  (( )) : SW
  ( ) : LW/MW
- Voltages are taken with a VOM (50 kΩ/V). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ➡ : LW/MW
  ➡ : SW

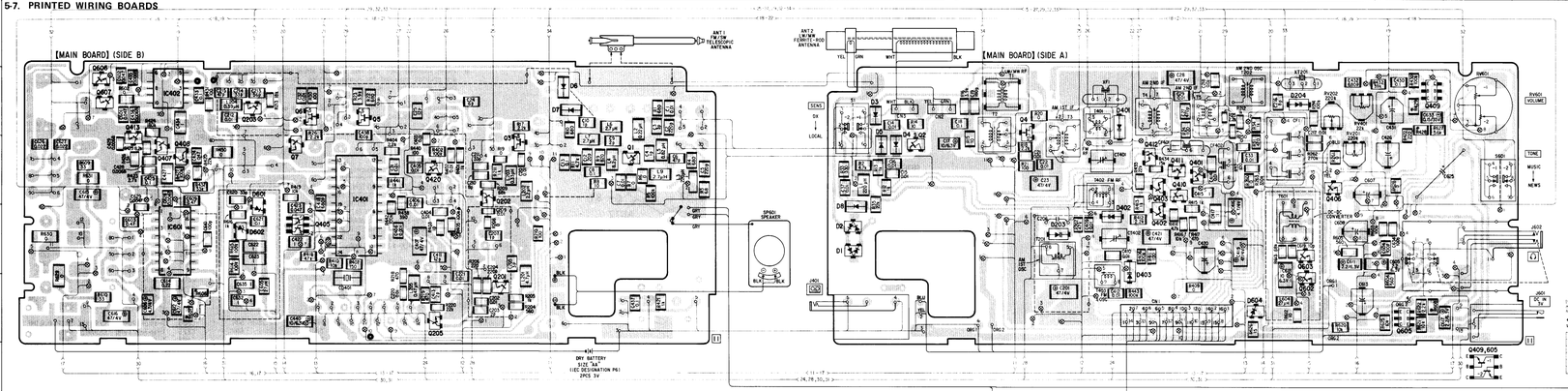
FORMER TYPE

FORMER TYPE

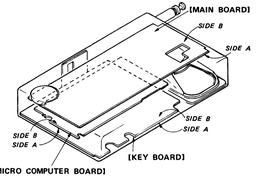
FORMER TYPE

FORMER TYPE

5-7. PRINTED WIRING BOARDS



- **Circuit Boards Location**



- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D1	D-13	D813	J-24	Q409	B-21
D2	D-13			Q410	C-18
D3	B-13	IC401	C-6	Q411	C-18
D4	B-14	IC402	B-3	Q412	C-17
D5	B-13	IC601	D-3	Q413	B-2
D6	B-9	IC801	I-5	Q420	C-7
D7	B-9	IC802	H-4	Q602	E-19
D8	D-13	IC803	I-3	Q603	D-19
D203	D-16	IC804	H-1	Q605	E-21
D204	B-19			Q606	B-2
D401	B-17	Q1	C-10	Q607	B-2
D402	D-17	Q2	B-14	Q801	J-4
D403	D-17	Q3	C-8	Q802	J-4
D601	C-4	Q4	B-15	Q804	G-2
D602	D-4	Q5	B-6	Q805	I-2
D604	E-19	Q6	B-5	Q806	I-1
D801	J-4	Q7	C-5	Q807	I-1
D802	J-6	Q201	E-8	Q808	J-3
D803	I-24	Q202	C-8	Q809	H-3
D804	I-24	Q203	B-4	Q811	I-1
D805	I-24	Q205	E-7	Q812	I-2
D806	G-22	Q401	C-18	Q813	J-1
D807	G-1	Q402	D-17	Q814	J-1
D808	H-2	Q403	C-17	Q815	I-1
D809	I-2	Q405	D-5	Q816	I-4
D810	I-2	Q406	C-20	Q817	J-3
D811	I-4	Q407	C-3	Q818	J-4
D812	I-3	Q408	C-3		

It is needed to replace all those parts marked ★ at the same time in case when necessary replacement for one of them.
★印の部品すべてを同じ方に部品を交換する
ときは同時に部品交換をお願いします。

REF. NO.	OLD	NEW
R429	220k	470k
R430	100k	47k
R606	10k	4.7k
R607	10k	4.7k
R608	100k	56k

Note:
- Color code or sleeving over the end of the jacket.

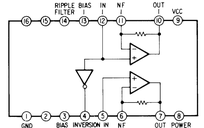
- ○—— : parts extracted from the component side.
- ——○ : parts extracted from the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern on the side which is seen.
- ⊗——⊗ : Through hole to SIDE A and SIDE B indicate to jointed number and connection.
- ○——○ SIDE A and SIDE B indicate to jointed number and connection.
- ■ : parts mounted on the conductor side.

Destination	Former Type Serial No.
US	Up to 23900
Canadian	Up to A24700
AEP	Up to 24600
UK	Up to 33400
E	Up to 22690
Australian	Up to 30500

- Switches:

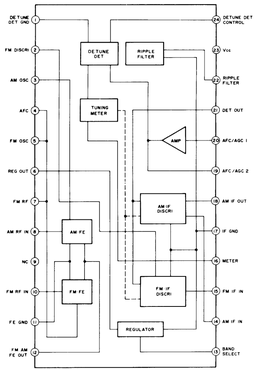
Ref. No.	Switch	Position
S1	SENS	DX
S101	0	OFF
S102	1	OFF
S103	2	OFF
S104	3	OFF
S105	4	OFF
S106	5	OFF
S107	6	OFF
S108	7	OFF
S109	8	OFF
S110	ENTER/TIME SET	OFF
S111	9	OFF
S112	AM EXECUTE	OFF
S113	FM EXECUTE	OFF
S114	BAND ALARM SET	OFF
S115	SCAN TUNE	OFF
S116	KEY PROJECT	OFF
S117	+	OFF
S118	POWER	OFF
S119	SLEEP	OFF
S120	–	OFF
S601	TONE	MUSIC
S801	MW CH STEP	9 kHz
S802	LIGHT	OFF
S803	MAIN POWER	OFF

IC601 BA5208AF

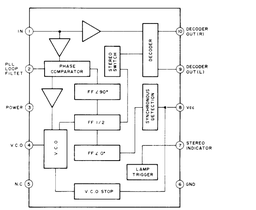


5-8. IC BLOCK DIAGRAM

IC401 CX20111



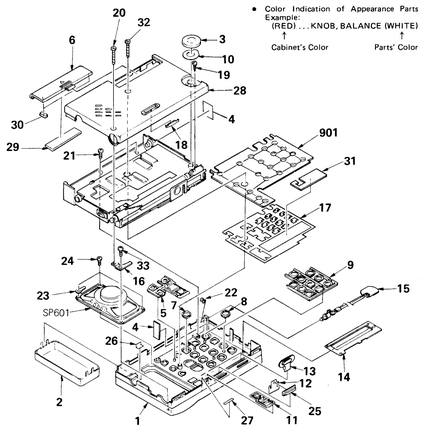
IC402 LA3335M



SECTION 6
EXPLODED VIEWS

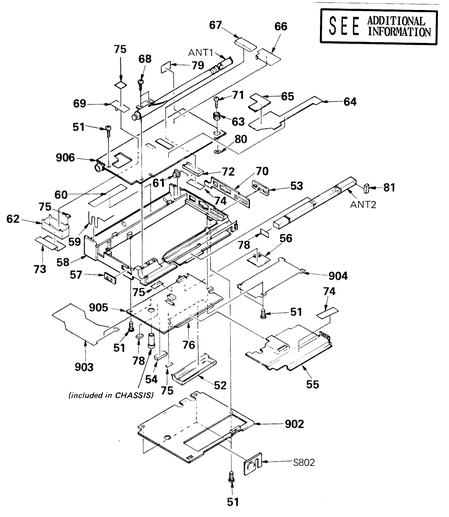
NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) ... KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts' Color

6-1.



No.	Part No.	Description	Remarks
1	X-3899-501-1	CABINET (FRONT) ASSY	
2	3-899-527-01	PANEL, SPEAKER	
3	3-899-506-01	KNOB (VOLUME)	
4	*3-899-575-01	SHEET (STRAP)	
5	3-899-549-01	BUTTON (DOUBLE)	
6	3-899-535-01	LID, BATTERY CASE	
7	3-899-561-01	BUTTON (10 KEY)	
8	3-899-560-01	BUTTON (10 KEY)	
9	3-899-551-01	BUTTON (10 KEY)	
10	*3-899-570-01	SHEET (VR)	
11	3-899-550-01	BUTTON (POWER)	
12	3-899-534-01	SHEET (B), RETAINER	
13	3-899-511-01	KNOB (MAIN POWER)	
14	3-899-531-01	(US,Canadian,Australian E TYPE1=1/1=2 AEP TYPE1-1/1-2,UK)...PLATE, BACK	
	3-899-531-11	(AEP TYPE3-1/3-2).....PLATE, BACK	
	3-899-531-21	(E TYPE2,AEP TYPE2).....PLATE, BACK	
	3-899-531-31	(Saudi Arabia).....PLATE, BACK	
15	X-3899-503-1	STRAP ASSY, HAND	
16	3-899-526-01	BRACKET	
17	3-899-548-01	SHEET (A), RETAINER	
18	3-899-533-01	HOLDER	
19	7-685-104-19	SCREW (B 2X6), P TAPPING	
20	7-621-256-00	SCREW +P 2X16	
21	2-370-905-31	SCREW +PTP 2X3.5	
22	7-624-102-04	STOP RING 1.5, TYPE -E	
23	7-623-505-01	LUG, 2	
24	*4-908-792-11	SCREW (B 2X3), TAPPING, P1	
25	3-899-510-01	(US,Canadian,Australian E TYPE1=2/2,Saudi Arabia AEP TYPE1-1/1-2/2/3-1/3-2,UK) ...BUTTON (LIGHT)	
	3-899-510-11	(E TYPE1-1).....BUTTON (LIGHT)	
26	*3-899-577-01	COPPER LEAF (A)	
27	*3-899-581-01	COPPER LEAF (B)	
28	3-899-558-11	CABINET (REAR)	
29	3-831-441-XX	CUSHION (B)	
30	3-831-441-11	SPACER	
31	3-899-573-01	MEMBRANE, CONDUCTIVE	
32	3-564-708-21	SCREW, TAPPING +2X18	
33	4-908-792-21	SCREW (B 2X4), TAPPING, P1	
901	1-571-386-11	SWITCH, RUBBER KEY (S101-S120)	
SP601	1-503-842-11	SPEAKER	

6-2.



No.	Part No.	Description	Remarks
51	2-370-905-31	SCREW +PTP 2X3.5	
52	*3-899-530-01	CASE, SHIELD	
53	3-899-509-01	KNOB (TONE)	
54	*3-899-575-01	SHEET (STRAP)	
55	*X-3899-502-1	PLATE (A) ASSY, SHIELD	
56	*3-899-521-01	PLATE (CLOCK), SHIELD	
57	3-899-508-01	KNOB	
58	*3-899-559-01	CHASSIS	
59	3-899-529-01	TERMINAL, BATTERY	
60	*3-899-501-01	LABEL (MW STEP)	
61	3-899-529-01	SPRING	
62	*3-899-522-01	CASE (AM LOCAL), SHIELD	
63	3-899-505-01	SHAFT	
64	*X-3899-505-1	PLATE (IF) ASSY, SHIELD	
65	*3-899-574-01	SHEET (SPEAKER)	
66	*X-3899-506-1	PLATE (AF) ASSY, SHIELD	
67	*3-899-523-01	CASE, SHIELD	
68	7-685-104-19	SCREW (B 2X6), P TAPPING	
69	*X-3899-504-1	PLATE (VCO) ASSY, SHIELD	
70	*3-899-525-01	REINFORCEMENT	
71	7-627-850-67	SCREW, PRECISION +P 1.4X4	
72	*3-899-524-01	CASE, SHIELD	
73	*3-899-576-01	SHEET (VCO)	
74	*3-899-575-01	SHEET (STRAP)	
75	*3-899-582-01	INSULATOR (E)	
76	*3-899-507-01	PLATE, LIGHT GUIDE	
78	9-911-844-XX	SPEAKER (B)	
79	*3-339-464-01	CUSHION (LED)	
80	7-823-953-01	WASHER	
81	*3-556-814-01	CUSHION	
902	A-3679-087-A	MOUNTED PCB, KEY	
903	1-625-372-11	PC BOARD, MICON FLEXIBLE	
904	1-625-371-11	PC BOARD, MA FLEXIBLE	
905	A-3675-007-A	MOUNTED PCB, MICRO COMPUTER	
906	A-3615-207-A	MOUNTED PCB, MAIN	
ANT1	1-501-401-11	ANTENNA, TELESCOPIC	
ANT2	1-402-345-11	ANTENNA, FERRITE-ROD (LW/MW)	
S802	1-571-385-11	SWITCH, KEY BOARD (LIGHT)	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description		
901	1-571-386-11	SWITCH, RUBBER KEY (S101-S120)		
902	A-3679-087-A	MOUNTED PCB, KEY		
903	1-625-372-11	PC BOARD, MICON FLEXIBLE		
908	1-559-706-11	CORD (WITH PLUG)		
904	1-625-371-11	PC BOARD, MA FLEXIBLE		
905	A-3675-007-A	MOUNTED PCB, MICRO COMPUTER		
906	A-3615-207-A	MOUNTED PCB, MAIN		
907	1-501-400-11	ANTENNA, TELESCOPIC		
ANT1	1-501-401-11	ANTENNA, TELESCOPIC		
ANT2	1-402-345-11	ANTENNA, FERRITE-ROD (LW/MW)		
C1	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C2	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C3	1-162-934-11	CERAMIC CHIP 3PF	0.25PF	50V
C4	1-162-930-11	CERAMIC CHIP 1PF	0.25PF	50V
C5	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C6	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C7	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C8	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C9	1-162-932-11	CERAMIC CHIP 2PF	0.25PF	50V
C10	1-162-930-11	CERAMIC CHIP 1PF	0.25PF	50V
C12	1-164-113-11	CERAMIC CHIP 220PF	5%	50V
C13	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C14	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C15	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C16	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C17	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C18	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C19	1-162-956-11	CERAMIC CHIP 180PF	5%	50V
C20	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C21	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C22	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C23	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C24	1-163-089-00	CERAMIC CHIP 6PF	0.25PF	50V
C25	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C27	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C28	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C29	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C31	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C32	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C33	1-164-004-11	(NEW).....CERAMIC CHIP 0.1MF	10%	25V
	1-162-970-11	(FORMER)..CERAMIC CHIP 0.01MF	10%	25V
C37	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C201	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C202	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C203	1-162-932-11	CERAMIC CHIP 2PF	0.25PF	50V
C204	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C205	1-162-934-11	CERAMIC CHIP 3PF	0.25PF	50V
C206	1-162-839-11	CERAMIC	0.01MF	20% 16V
C207	1-162-930-11	CERAMIC CHIP 1PF	0.25PF	50V
C209	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C210	1-162-939-11	CERAMIC CHIP 9PF	0.5PF	50V
C211	1-162-947-11	CERAMIC CHIP 33PF	5%	50V
C212	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C213	1-162-950-11	CERAMIC CHIP 56PF	5%	50V
C214	1-163-105-00	(NEW).....CERAMIC CHIP 33PF	5%	50V
	1-162-947-11	(FORMER)..CERAMIC CHIP 33PF	5%	50V
C215	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C216	1-162-939-11	CERAMIC CHIP 9PF	0.5PF	50V
C217	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C218	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C220	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C221	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C402	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C403	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C404	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C405	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C406	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C407	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C408	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C409	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C410	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C411	1-162-942-11	CERAMIC CHIP 12PF	5%	50V
C412	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C413	1-162-932-11	CERAMIC CHIP 2PF	0.25PF	50V
C414	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C415	1-162-638-11	CERAMIC CHIP 1MF		16V
C416	1-135-151-21	TANTAL. CHIP 4.7MF	20%	4V
C417	1-162-638-11	CERAMIC CHIP 1MF		16V
C418	1-162-963-11	CERAMIC CHIP 680PF	10%	50V
C419	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C420	1-126-248-11	ELECT	220MF	20% 4V
C421	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C422	1-162-638-11	CERAMIC CHIP 1MF		16V
C423	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C424	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C425	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C426	1-126-208-11	ELECT	4.7MF	20% 4V
C427	1-162-638-11	CERAMIC CHIP 1MF		16V
C428	1-162-969-11	CERAMIC CHIP 0.0068MF	10%	25V
C429	1-162-969-11	CERAMIC CHIP 0.0068MF	10%	25V
C430	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C431	1-126-208-11	ELECT	4.7MF	20% 4V
C432	1-163-137-00	CERAMIC CHIP 680PF		50V

Ref.No.	Part No.	Description		
C433	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C434	1-162-638-11	CERAMIC CHIP 1MF		16V
C435	1-162-969-11	CERAMIC CHIP 0.0068MF	10%	25V
C436	1-162-969-11	CERAMIC CHIP 0.0068MF	10%	25V
C437	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C438	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C440	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C601	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C602	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C603	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C604	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C605	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C606	1-135-151-21	TANTAL. CHIP 4.7MF	20%	4V
C607	1-126-209-11	ELECT 100MF	20%	4V
C608	1-126-207-11	ELECT 33MF	20%	4V
C609	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C610	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C611	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C612	1-135-151-21	TANTAL. CHIP 4.7MF	20%	4V
C613	1-126-246-11	ELECT 220MF	20%	4V
C614	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C615	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C616	1-135-098-21	TANTAL. CHIP 47MF	20%	4V
C617	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C618	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C619	1-162-941-11	CERAMIC CHIP 10PF	0.5PF	50V
C620	1-162-947-11	CERAMIC CHIP 33PF	5%	50V
C621	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C622	1-162-638-11	CERAMIC CHIP 1MF		16V
C623	1-162-638-11	CERAMIC CHIP 1MF		16V
C625	1-125-513-11	DOUBLE LAYERS 0.047F		5.5V
C626	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C627	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C628	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C629	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C632	1-162-638-11	CERAMIC CHIP 1MF		16V
C633	1-135-071-21	TANTAL. CHIP 0.15MF	20%	35V
C634	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C635	1-162-638-11	CERAMIC CHIP 1MF		16V
C802	1-130-774-00	FILM 0.33MF	10%	63V
C803	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C804	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C806	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C807	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C808	1-162-638-11	CERAMIC CHIP 1MF		16V
C809	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C810	1-162-968-11	(NEW).....CERAMIC CHIP 0.0047MF	10%	50V
	1-162-964-11	(FORMER)..CERAMIC CHIP 0.001MF	10%	50V
C811	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C812	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C813	1-164-149-11	CERAMIC CHIP 36PF	5%	50V
C814	1-164-185-11	(NEW).....CERAMIC CHIP 13PF	5%	50V
	1-162-942-11	(FORMER)..CERAMIC CHIP 12PF	5%	50V
C816	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C817	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C818	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C819	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C820	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C821	1-162-953-11	CERAMIC CHIP 100PF	5%	50V

Ref.No.	Part No.	Description		
C822	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C823	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C824	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C825	1-162-962-11	CERAMIC CHIP 470PF	10%	50V
C826	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C827	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C828	1-124-576-11	ELECT 220MF	20%	4V
C829	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C830	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C831	1-162-970-11	(NEW).....CERAMIC CHIP 0.01MF	10%	25V
CD401	1-577-065-11	FILTER, CERAMIC		
CF1	1-577-030-11	FILTER, CERAMIC		
CF401	1-567-389-11	FILTER, CERAMIC		
CF402	1-567-389-11	FILTER, CERAMIC		
CN1	1-565-073-11	SOCKET, CONNECTOR 16P		
CN2	1-566-385-11	PIN, CONNECTOR 2P		
CN3	1-566-385-11	PIN, CONNECTOR 2P		
CT401	1-141-347-11	CAP, VAR, TRIMMER (CHIP)		
CT402	1-141-347-11	CAP, VAR, TRIMMER (CHIP)		
D1	8-719-101-23	DIODE 1SS123		
D2	8-719-101-23	DIODE 1SS123		
D3	8-719-123-79	DIODE 1SS279		
D4	8-719-123-79	DIODE 1SS279		
D5	8-719-123-79	DIODE 1SS279		
D6	8-719-123-79	DIODE 1SS279		
D7	8-719-123-79	DIODE 1SS279		
D8	8-719-123-79	DIODE 1SS279		
D203	8-713-300-00	DIODE 1T33		
D204	8-713-300-00	DIODE 1T33		
D401	8-713-300-00	DIODE 1T33		
D402	8-713-300-00	DIODE 1T33		
D403	8-713-300-00	DIODE 1T33		
D601	8-719-123-82	DIODE 1SS303		
D602	8-719-106-80	DIODE RD13M-B2		
D604	8-719-123-85	DIODE 1SS304		
D801	8-719-123-85	DIODE 1SS304		
D802	8-719-123-85	DIODE 1SS304		
D803	8-719-123-85	DIODE 1SS304		
D804	8-719-123-85	DIODE 1SS304		
D805	8-719-123-85	DIODE 1SS304		
D806	8-719-800-54	DIODE TLUR122		
D807	8-719-812-33	DIODE TLG123A		
D808	8-719-123-85	DIODE 1SS304		
D809	8-719-123-85	DIODE 1SS304		
D810	8-719-123-85	DIODE 1SS304		
D811	8-719-101-23	DIODE 1SS123		
D812	8-719-123-82	DIODE 1SS303		
D813	8-719-123-85	DIODE 1SS304		
IC401	8-752-011-11	IC CX20111		
IC402	8-759-804-98	IC LA3335M		
IC601	8-759-910-71	IC BA5208AF		
IC801	8-759-142-35	IC UPD1715G-558-22		
IC802	8-759-947-95	IC S-8051HN-CD-S		
IC803	8-759-804-76	IC LA5002M		
IC804	8-759-113-94	IC UPD74HC239G		
J401	1-507-950-21	JACK (SMALL TYPE)(REC OUT)		
J601	1-565-074-11	JACK, OUTER POWER 1P (DC IN 3V)		
J602	1-507-958-31	JACK (HEADPHONE)		

Ref.No.	Part No.	Description
L1	1-410-220-31	INDUCTOR CHIP 220UH
L2	1-410-733-21	INDUCTOR CHIP 0.22UH
L3	1-410-220-31	INDUCTOR CHIP 220UH
L4	1-410-203-51	INDUCTOR CHIP 8.2UH
L5	1-410-191-51	INDUCTOR CHIP 0.82UH
L6	1-410-197-11	INDUCTOR CHIP 2.7UH
L7	1-410-197-11	INDUCTOR CHIP 2.7UH
L9	1-410-197-11	INDUCTOR CHIP 2.7UH
L201	1-410-200-31	INDUCTOR CHIP 4.7UH
L202	1-410-196-11	INDUCTOR CHIP 2.2UH
L203	1-410-186-51	INDUCTOR CHIP 0.33UH
L204	1-410-187-41	INDUCTOR CHIP 0.39UH
L205	1-410-188-51	INDUCTOR CHIP 0.47UH
L604	1-412-011-31	INDUCTOR CHIP 27UH
L605	1-412-011-31	INDUCTOR CHIP 27UH
LCD801	1-808-270-11	DISPLAY PANEL, LIQUID CRYSTAL
Q1	8-729-123-86	TRANSISTOR 2SK238-K16
Q2	8-729-123-86	TRANSISTOR 2SK238-K16
Q3	8-769-401-59	TRANSISTOR 2SK613-3
Q4	8-769-401-59	TRANSISTOR 2SK613-3
Q5	8-769-401-59	TRANSISTOR 2SK613-3
Q6	8-729-109-42	TRANSISTOR 2SK94-X2
Q7	8-729-117-72	TRANSISTOR 2SC4178
Q201	8-729-117-72	TRANSISTOR 2SC4178
Q202	8-729-117-72	TRANSISTOR 2SC4178
Q203	8-729-117-72	TRANSISTOR 2SC4178
Q205	8-729-117-72	TRANSISTOR 2SC4178
Q401	8-729-905-61	TRANSISTOR DTC124EU
Q402	8-729-107-45	TRANSISTOR 2SC3624A-L16
Q403	8-729-107-45	TRANSISTOR 2SC3624A-L16
Q405	8-729-402-75	TRANSISTOR XN5501
Q406	8-729-800-36	TRANSISTOR 2SD1048
Q407	8-729-117-32	TRANSISTOR 2SC4177
Q408	8-729-117-32	TRANSISTOR 2SC4177
Q409	8-729-402-16	TRANSISTOR XN4608
Q410	8-729-117-32	TRANSISTOR 2SC4177
Q411	8-729-117-32	TRANSISTOR 2SC4177
Q412	8-729-905-61	TRANSISTOR DTC124EU
Q413	8-729-905-61	TRANSISTOR DTC124EU
Q420	8-729-123-86	TRANSISTOR 2SK238-K16
Q602	8-729-117-32	TRANSISTOR 2SC4177
Q603	8-729-117-32	TRANSISTOR 2SC4177
Q605	8-729-402-16	TRANSISTOR XN4608
Q606	8-729-800-36	TRANSISTOR 2SD1048
Q607	8-729-800-36	TRANSISTOR 2SD1048
Q801	8-729-109-42	TRANSISTOR 2SK94-X2
Q802	8-729-117-32	TRANSISTOR 2SC4177
Q804	8-729-117-32	TRANSISTOR 2SC4177
Q805	8-729-905-99	TRANSISTOR DTC114TU
Q806	8-729-905-99	TRANSISTOR DTC114TU
Q807	8-729-905-99	TRANSISTOR DTC114TU
Q808	8-729-905-61	TRANSISTOR DTC124EU
Q809	8-729-402-16	TRANSISTOR XN4608
Q811	8-729-800-68	TRANSISTOR 2SB815
Q812	8-729-800-68	TRANSISTOR 2SB815
Q813	8-729-800-68	TRANSISTOR 2SB815
Q814	8-729-800-68	TRANSISTOR 2SB815
Q815	8-729-800-68	TRANSISTOR 2SB815

Ref.No.	Part No.	Description
Q816	8-729-800-68	TRANSISTOR 2SB815
Q817	8-729-109-42	TRANSISTOR 2SK94-X2
Q818	8-729-403-17	TRANSISTOR XN1215
R1	1-216-819-11	METAL GLAZE 680 5% 1/16W
R2	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W
R3	1-216-807-11	METAL GLAZE 68 5% 1/16W
R4	1-216-819-11	METAL GLAZE 680 5% 1/16W
R5	1-216-845-11	METAL GLAZE 100K 5% 1/16W
R6	1-216-864-11	METAL GLAZE 0 5% 1/16W
R7	1-216-864-11	METAL GLAZE 0 5% 1/16W
R8	1-216-797-11	METAL GLAZE 10 5% 1/16W
R9	1-216-820-11	METAL GLAZE 820 5% 1/16W
R10	1-216-819-11	METAL GLAZE 680 5% 1/16W
R11	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W
R12	1-216-821-11	METAL GLAZE 1K 5% 1/16W
R13	1-216-821-11	METAL GLAZE 1K 5% 1/16W
R14	1-216-864-11	(NEW).....METAL GLAZE 0 5% 1/16W
	1-216-797-11	(FORMER)..METAL GLAZE 10 5% 1/16W
R15	1-216-797-11	METAL GLAZE 10 5% 1/16W
R16	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W
R17	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W
R18	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W
R19	1-216-864-11	(FORMER)..METAL GLAZE 0 5% 1/16W
R20	1-216-864-11	(FORMER)..METAL GLAZE 0 5% 1/16W
R21	1-216-809-11	METAL GLAZE 100 5% 1/16W
R22	1-216-819-11	METAL GLAZE 680 5% 1/16W
R23	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W
R24	1-216-809-11	METAL GLAZE 100 5% 1/16W
R25	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W
R26	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W
R30	1-216-809-11	METAL GLAZE 100 5% 1/16W
R31	1-216-817-11	METAL GLAZE 470 5% 1/16W
R32	1-216-809-11	METAL GLAZE 100 5% 1/16W
R33	1-216-815-11	METAL GLAZE 330 5% 1/16W
R34	1-216-821-11	METAL GLAZE 1K 5% 1/16W
R35	1-216-837-11	METAL GLAZE 22K 5% 1/16W
R204	1-216-818-11	METAL GLAZE 560 5% 1/16W
R205	1-216-821-11	METAL GLAZE 1K 5% 1/16W
R206	1-216-813-11	METAL GLAZE 220 5% 1/16W
R207	1-216-841-11	METAL GLAZE 47K 5% 1/16W
R208	1-216-864-11	(FORMER)..METAL GLAZE 0 5% 1/16W
R209	1-216-843-11	METAL GLAZE 68K 5% 1/16W
R210	1-216-809-11	METAL GLAZE 100 5% 1/16W
R211	1-216-821-11	METAL GLAZE 1K 5% 1/16W
R212	1-216-821-11	METAL GLAZE 1K 5% 1/16W
R213	1-216-836-11	METAL GLAZE 18K 5% 1/16W
R214	1-216-845-11	METAL GLAZE 100K 5% 1/16W
R218	1-216-817-11	METAL GLAZE 470 5% 1/16W
R219	1-216-817-11	METAL GLAZE 470 5% 1/16W
R220	1-216-837-11	METAL GLAZE 22K 5% 1/16W
R250	1-216-864-11	METAL GLAZE 0 5% 1/16W
R260	1-216-842-11	(NEW).....METAL GLAZE 56K 5% 1/16W
	1-216-864-11	(FORMER)..METAL GLAZE 0 5% 1/16W
R261	1-216-864-11	METAL GLAZE 0 5% 1/16W
R262	1-216-850-11	METAL GLAZE 270K 5% 1/16W
R263	1-216-851-11	METAL GLAZE 330K 5% 1/16W
R401	1-216-821-11	METAL GLAZE 1K 5% 1/16W
R402	1-216-845-11	METAL GLAZE 100K 5% 1/16W

Ref.No.	Part No.	Description			
R403	1-216-797-11	METAL GLAZE	10	5%	1/16W
R404	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R405	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R406	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R407	1-216-811-11	METAL GLAZE	150	5%	1/16W
R409	1-216-864-11	METAL GLAZE	0	5%	1/16W
R410	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R411	1-216-809-11	METAL GLAZE	100	5%	1/16W
R412	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R413	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R414	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R415	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R416	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R417	1-216-817-11	METAL GLAZE	470	5%	1/16W
R418	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R419	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R420	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R421	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R422	1-216-813-11	METAL GLAZE	220	5%	1/16W
R423	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W
R424	1-216-848-11	METAL GLAZE	180K	5%	1/16W
R425	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R426	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W
R427	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R428	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R429	1-216-841-11	METAL GLAZE	47K	5%	1/16W
R430	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R431	1-216-809-11	METAL GLAZE	100	5%	1/16W
R432	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R433	1-216-837-11	METAL GLAZE	22K	5%	1/16W
R434	1-216-835-11	METAL GLAZE	15K	5%	1/16W
R437	1-216-839-11	METAL GLAZE	33K	5%	1/16W
R438	1-216-816-11	METAL GLAZE	390	5%	1/16W
R440	1-216-809-11	METAL GLAZE	100	5%	1/16W
R441	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R442	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R443	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R450	1-216-296-00	METAL GLAZE	0	5%	1/8W
R602	1-216-864-11	METAL GLAZE	0	5%	1/16W
R603	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R604	1-216-818-11	METAL GLAZE	560	5%	1/16W
R605	1-216-818-11	METAL GLAZE	560	5%	1/16W
R606	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R607	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R608	1-216-842-11	METAL GLAZE	56K	5%	1/16W
R609	1-216-013-00	METAL GLAZE	33	5%	1/10W
R610	1-216-013-00	METAL GLAZE	33	5%	1/10W
R612	1-216-797-11	METAL GLAZE	10	5%	1/16W
R613	1-216-843-11	METAL GLAZE	68K	5%	1/16W
R614	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R615	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R616	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R620	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R621	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R622	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R625	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R626	1-216-799-11	METAL GLAZE	15	5%	1/16W
R627	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W
R628	1-216-864-11	(NEW)..... METAL GLAZE	0	5%	1/16W
	1-216-296-00	(FORMER).. METAL GLAZE	0	5%	1/8W
R629	1-216-296-00	(FORMER).. METAL GLAZE	0	5%	1/8W
R630	1-216-296-00	(FORMER).. METAL GLAZE	0	5%	1/8W
R631	1-216-296-00	(FORMER).. METAL GLAZE	0	5%	1/8W
R801	1-216-834-11	METAL GLAZE	12K	5%	1/16W
R802	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R803	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W
R804	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W
R810	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R811	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R812	1-216-821-11	METAL GLAZE	1K	5%	1/16W
R813	1-216-820-11	METAL GLAZE	820	5%	1/16W
R818	1-216-805-11	METAL GLAZE	47	5%	1/16W
R819	1-216-857-11	METAL GLAZE	1M	5%	1/16W
R820	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R821	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R822	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R824	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R825	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R826	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R827	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R828	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R829	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R831	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R833	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W
R834	1-216-840-11	METAL GLAZE	39K	5%	1/16W
R835	1-216-813-11	METAL GLAZE	220	5%	1/16W
R837	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W
R838	1-216-797-11	METAL GLAZE	10	5%	1/16W
R839	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R840	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R841	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R842	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R843	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R844	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R845	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R846	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R847	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R848	1-216-821-11	(NEW)..... METAL GLAZE	1K	5%	1/16W
	1-249-417-11	(FORMER).. RES, CARBON	1K	5%	1/4W
R849	1-216-833-11	METAL GLAZE	10K	5%	1/16W
R850	1-216-857-11	(NEW)..... METAL GLAZE	1M	5%	1/16W
R851	1-216-857-11	(NEW)..... METAL GLAZE	1M	5%	1/16W
R888	1-216-295-00	(FORMER).. METAL GLAZE	0	5%	1/10W
RV202	1-237-146-21	RES, ADJ, METAL GLAZE 220K			
RV401	1-237-119-11	RES, ADJ, METAL GLAZE 22K			
RV601	1-237-997-11	RES, VAR, CARBON 20K/20K (VOLUME)			
S1	1-570-114-11	SWITCH, SLIDE (SENS)			
S601	1-570-114-11	SWITCH, SLIDE (TONE)			
S801	1-570-675-11	SWITCH, SLIDE (MW CH STEP)			
S802	1-571-385-11	SWITCH, KEY BOARD (LIGHT)			
S803	1-570-675-11	SWITCH, SLIDE (MAIN POWER)			
SP601	1-503-842-11	SPEAKER			
T1	1-426-345-11	TRANSFORMER, HIGH FREQUENCY			
T2	1-426-357-11	TRANSFORMER, RF			
T3	1-404-780-11	TRANSFORMER, IF			
T4	1-404-779-11	TRANSFORMER, IF			

Ref.No.	Part No.	Description
T5	1-404-778-11	TRANSFORMER, IF
T201	1-406-271-11	COIL (OSC)
T202	1-406-270-11	COIL (OSC)
T401	1-459-828-11	COIL (WITH CORE)
T402	1-459-829-11	COIL (WITH CORE)
T403	1-459-827-11	COIL (WITH CORE)
T601	1-449-021-21	TRANSFORMER, DC-DC CONVERTER
XF1	1-567-987-11	FILTER, CRYSTAL
XT201	1-567-986-11	VIBRATOR, CRYSTAL (55.4MHz)
XT801	1-567-769-11	VIBRATOR, CRYSTAL (75kHz)

ACCESSORY & PACKING MATERIAL

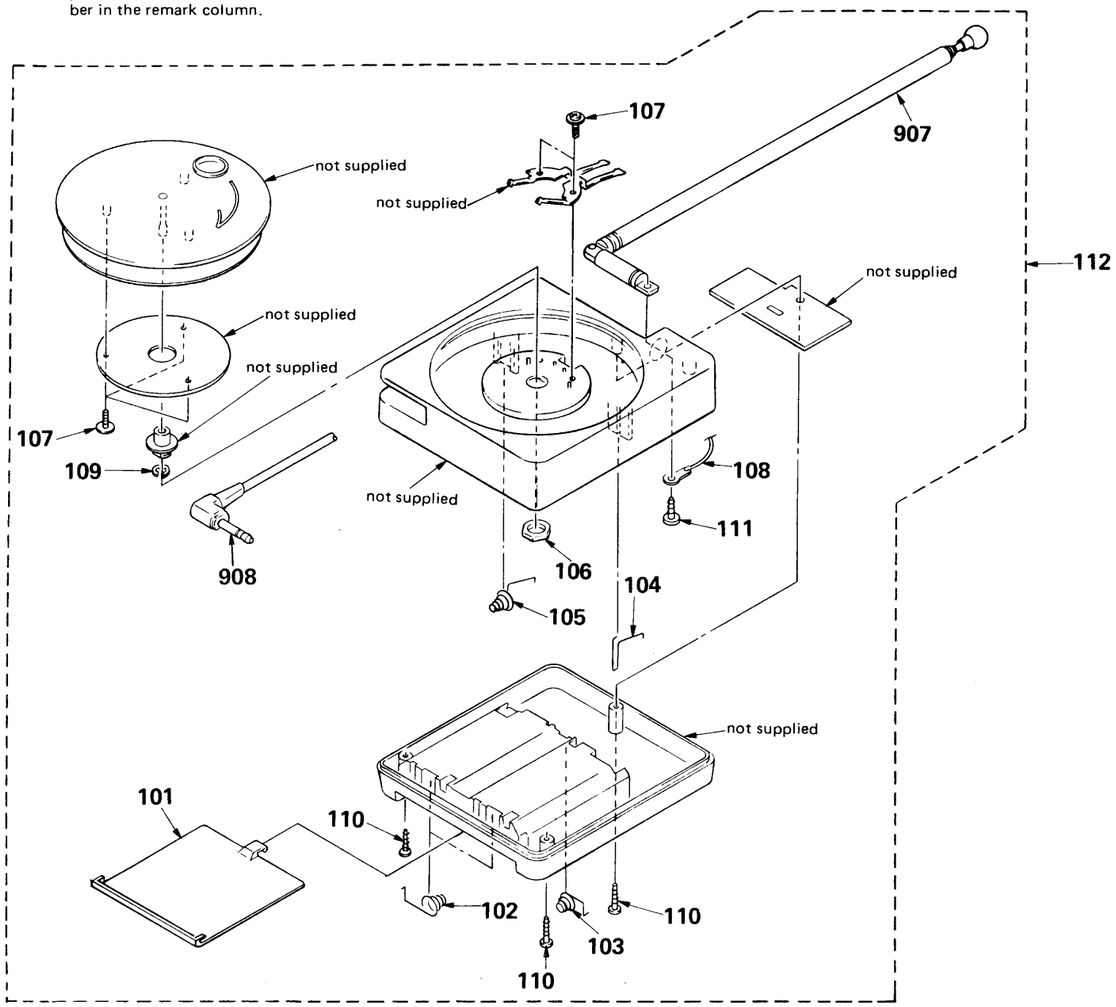
A-3642-002-A	COUPLER ASSY
⚠1-463-959-11	(Canadian).....ADAPTOR, AC (AC-302)
⚠1-463-960-11	(UK).....ADAPTOR, AC (AC-303)
⚠1-463-961-11	(US).....ADAPTOR, AC (AC-301)
⚠1-463-976-11	(AEP TYPE1-2/2/3-1)...ADAPTOR, AC (AC-304)
⚠1-463-977-11	(E TYPE1-1/1-2/2,Saudi Arabia AEP TYPE1-1/3-2).....ADAPTOR, AC (AC-301)
⚠1-506-444-11	(Canadian).....ADAPTOR, CONVERSION
⚠1-506-401-00	(AEP TYPE1-2/2/3-1)...ADAPTOR, CONVERSION
⚠1-565-250-11	(US,Saudi Arabia E TYPE1-1/1-2/2 AEP TYPE1-1/3-2).....PLUG, CONVERSION 2P
3-893-708-01	BELT, CARRYING
3-893-726-01	COLLAR, BELT
3-893-730-01	BRACKET, BELT
3-893-802-04	(EXCEPT Saudi Arabia, E TYPE2) ...BOOK, GUIDE, WAVE
3-887-285-07	(Saudi Arabia,E TYPE2)...BOOK, GUIDE, WAVE
3-899-537-01	CASE (SOFT), CARRYING
3-899-562-01	INDIVIDUAL CARTON
3-899-565-01	CASE (HARD), CARRYING
*3-899-566-01	CUSHION (B)
3-899-571-01	NUT (M2.6), PLATE
*3-899-572-01	(Canadian, AEP TYPE1-2/2/3-1, UK). BLIND, CASE
*3-899-572-11	(US,Saudi Arabia,Australian E TYPE1-1/1-2/2 AEP TYPE1-1/3-2).....BLIND, CASE
3-990-135-11	(Canadian, AEP, UK, E, Saudi Arabia, Australian)..... MANUAL, INSTRUCTION
3-990-135-21	(US)..... MANUAL, INSTRUCTION
3-990-135-41	(AEP)..... MANUAL, INSTRUCTION
7-621-662-40	SCREW +RK 2.6X10
7-624-109-04	STOP RING 5.0, TYPE -E
8-952-321-92	EARPHONE MDR-E434/C SET

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 8
ANTENNA MODULE (AN-101)

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.



No.	Part No.	Description	Remarks
101	3-899-544-01	LID, BATTERY CASE	
102	3-894-723-01	SPRING (B)	
103	3-894-717-01	SPRING (A)	
104	3-899-542-01	TERMINAL (-), BATTERY	
105	3-899-541-01	TERMINAL (+), BATTERY	
106	3-897-115-01	NUT, VOLUME	
107	3-318-201-31	SCREW (B) (1.4X5), TAPPING	
108	7-623-508-01	LUG, 3	
109	7-624-104-04	STOP RING 2.0, TYPE -E	
110	7-685-105-19	SCREW +P 2X8 TYPE2 SLIT	
111	7-685-646-79	SCREW +BTP 3X8 TYPE2 N-S	
112	A-3641-193-A	ANTENNA ASSY	
907	1-501-400-11	ANTENNA, TELESCOPIC	
908	1-559-706-11	CORD(WITH PLUG)	

SONY®

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model

SUPPLEMENT-1

File this supplement with the service manual.

Subject: ICF-SW1E model is added.
(except US, Canadian and Australian models)

- There are two types of sets, system type (ICF-SW1S) and economy type (ICF-SW1E) in this set.
- System type (ICF-SW1S) is all the same as ICF-SW1.
  See ICF-SW1 service manual previously issued for the information of this set.
- Economy type (ICF-SW1E) is the same as ICF-SW1 except for accessory and packing part. (See page 46.)

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• ACCESSORY & PACKING MATERIAL

Description	SYSTEM TYPE ICF-SW1S Part No.	ECONOMY TYPE ICF-SW1E Part No.
ANTENA MODULE (AN-101)	A-3641-193-A	
COUPLER ASSY	A-3642-002-A	
(Canadian) . . . . . ADAPTOR, AC (AC-302)	⚠ 1-463-959-11	
(UK) . . . . . ADAPTOR, AC (AC-303)	⚠ 1-463-960-11	
(US) . . . . . ADAPTOR, AC (AC-301)	⚠ 1-463-961-11	
(AEP TYPE1−2/3−1) . . . . . ADAPTOR, AC (AC-304)	⚠ 1-463-976-11	
(E TYPE1−1/1−2/2, Saudi Arabia AEP TYPE1−1/2/3−2) . . . . ADAPTOR, AC (AC-301)	⚠ 1-463-977-11	NOT SUPPLIED
(Canadian) . . . . . ADAPTOR, CONVERSION	⚠ 1-506-444-11	
(AEP TYPE1−2/3−1) . . . . ADAPTOR, CONVERSION	⚠ 1-506-409-11	
(US, E TYPE1−1/1−2/2, Saudi Arabia AEP TYPE1−1/2/3−2) . . . . PLUG, CONVERSION 2P	⚠ 1-565-250-11	
BELT, CARRYING	3-893-708-01	
COLLAR, BELT	3-893-726-01	
BRACKET, BELT	3-893-730-01	
(US, Canadian, E TYPE1−1/1−2, AEP, UK, Australian). . . . . BOOK, GUIDE, WAVE	3-893-802-04	3-893-802-04
(Saudi Arabia, E TYPE2 . . . . . BOOK, GUIDE, WAVE	3-887-285-07	3-887-285-07
CASE (SOFT), CARRYING	3-899-537-01	3-900-115-01
INDIVIDUAL CARTON	3-899-562-01	*3-900-103-01
INDIVIDUAL CARTON (LID)	————	*3-900-104-01
CUSHION	————	*3-900-105-01
CASE (HARD), CARRYING	3-899-565-01	
CUSHION (B)	3-899-566-01	
NUT (M2.6), PLATE	3-899-571-01	NOT SUPPLIED
(Canadian, AEP TYPE1−2/3−1, UK) . . . . BLIND, CASE	3-899-572-01	
(US, E TYPE1−1/1−2/2, Saudi Arabia, AEP TYPE1−1/2/3−2) . . . . . BLIND, CASE	3-899-572-11	
(Canadian, AEP, UK, E, Australian, Saudi Arabia). . . . . MANUAL; INSTRUCTION	3-990-135-11	3-786-366-11
(US) . . . . . MANUAL, INSTRUCTION	3-990-135-21	3-786-366-21
(AEP TYPE1−1/1−2/3−1) . MANUAL, INSTRUCTION	3-990-135-41	3-786-366-41
(Saudi Arabia) . . . . . MANUAL, INSTRUCTION	————	3-786-366-51
SCREW +RK2.6 x 10	7-621-662-40	NOT SUPPLIED
STOP RING 5.0 TYPE-E	7-624-109-04	
EARPHONE, MDR-E434	8-952-321-92	8-952-321-90

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

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(including 9-953-088-81)

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Audio Group

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ICF-SW1
AN-101

SONY
SERVICE MANUAL

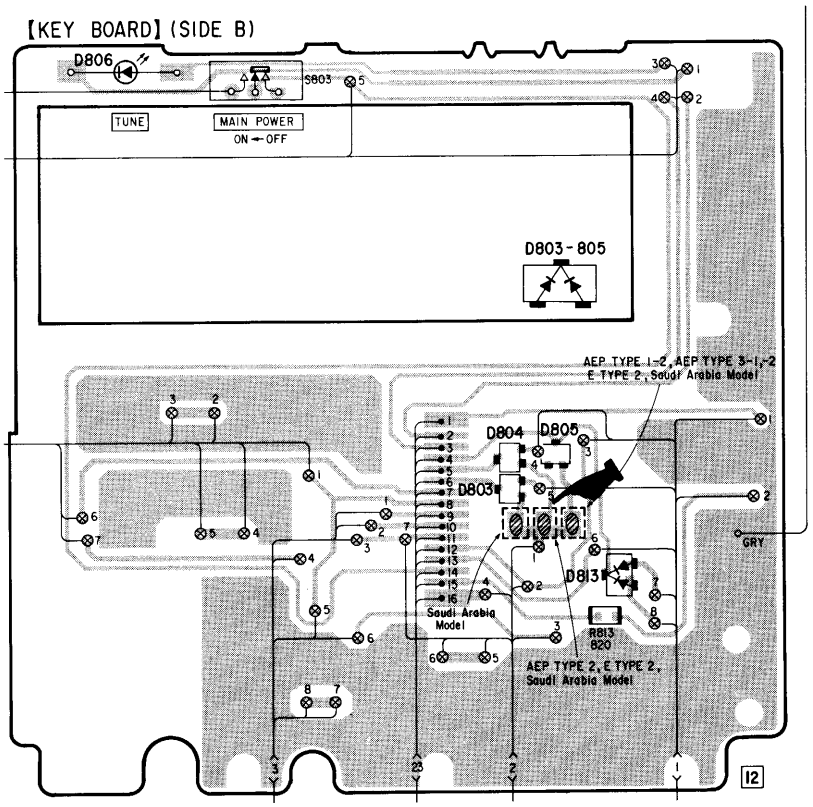
US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model

SUPPLEMENT-2

File this supplement with the service manual.

Subject:
AM frequency range is changed in West Germany model.
(150 kHz – 26.1 MHz ⇨ 150 kHz – 29.995 MHz)

- Applicable Serial No. 157,601 and later.
- Remove solder bridge ( ).



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ICF-SW1
AN-101

SONY

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model

SUPPLEMENT-3

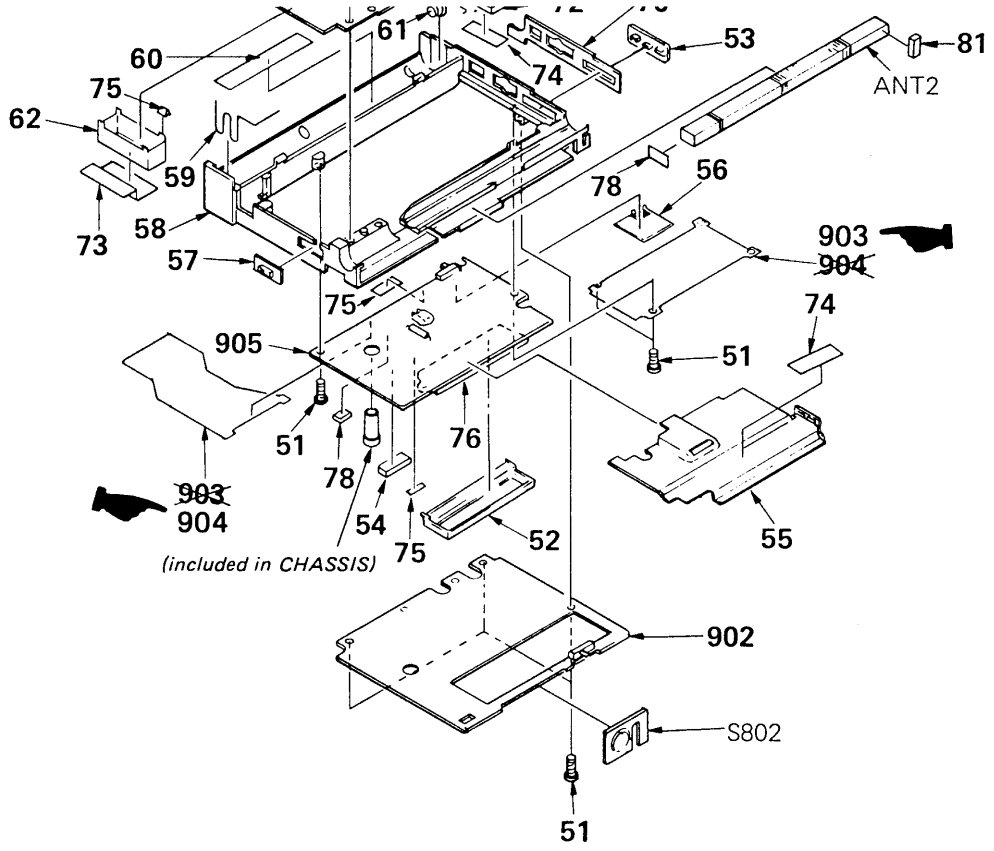
File this supplement with the service manual.

Subject: EXPLODED VIEWS

(RPC-97008)

• EXPLODED VIEWS (Service Manual see page 37)

☛: Changed portion



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Personal & Mobile Communication Company

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